183

DERIVATIVE FINANCIAL MARKETS
(Part 2)

Y 4. EN 2/3: 103-142

Derivative Financial Markets, (Part...

HEARING

BEFORE THE

SUBCOMMITTEE ON
TELECOMMUNICATIONS AND FINANCE

OF THE

COMMITTEE ON
ENERGY AND COMMERCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

JULY 13, 1994

Serial No. 103–142

Printed for the use of the Committee on Energy and Commerce

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DERIVATIVE FINANCIAL MARKETS

WEDNESDAY, JULY 13, 1994

House of Representatives,
Committee on Energy and Commerce,
Subcommittee on Telecommunications and Finance,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:40 a.m., in room 2322, Rayburn House Office Building, Hon. Edward J. Markey (chairman) presiding.

Mr. Markey. Good morning and welcome to the fourth oversight hearing on over-the-counter derivatives and their impact on the United States and global financial system.

Derivatives are financial products whose value is dependent on- or derived from- the value of an underlying financial asset or instrument. They are used by dealers, corporations, pension plans, mutual funds, municipal and State governments, and other institutional investors to hedge their business or portfolio risks, reduce their borrowing costs, or engage in leveraged speculation on the future direction of U.S. or global financial markets.

In the three oversight hearings the subcommittee has held to date, we have examined the factors behind the explosive growth and the use of OTC derivatives, the benefits and the risks associated with these financial instruments, and the adequacy of the regulations currently governing the activities of derivatives dealers and end-users.

Throughout the process, the subcommittee's focus has been on three critical public policy issues: the potential for derivatives to increase systemic risk; the adequacy of the internal controls and risk management systems employed by derivatives dealers and end-users; and the adequacy of the customer protections afforded to end-users and public investors in the form of disclosure, financial accounting, and sales practice and antifraud protections.

This morning, the subcommittee will be continuing its examination of the key public policy issues raised by derivatives. We will be looking at what risks are commonly associated with OTC derivatives, and how the prices and values of derivatives contracts are determined. In the stock and bond markets, the public dissemination of price quotes and transaction information allows all market participants to see clearly the current price of a security. But when it comes to derivatives, for now we see through a glass darkly. So who knows what prices and risks will lurk in the OTC derivatives market? Often, only the "Shadow" knows.

Today, the subcommittee will be hearing from three derivatives "Lamont Cranston's" about the pricing and risk management of derivatives instruments. In previous hearings, we have heard much about the quantitatively oriented "rocket scientists" who use modern portfolio management theory, complex options pricing algorithms, and computer and telecommunications technologies to decompose financial risk into component parts and create new custom-tailored derivative products out of the recombinant financial DNA.

Today's expert witnesses come to us with extensive backgrounds in the "rocket science" of financial derivatives—from the plainest of plain vanilla products to the most esoteric "synthetic exotic." We will be seeking their perspectives on the assumptions and uncertainties involved in marking derivatives to theoretical models. We will also be examining the role of stress tests and simulations in understanding derivatives risk. We will be asking for their views on how dealers, end-users, and regulators can each adjust to the new challenges posed by those innovative financial products.

One key area of concern identified in the subcommittee's previous hearings has been the presence of virtually unregulated derivatives dealers in the market. As the GAO derivatives study noted, while bank dealers are already subject to Federal oversight, including financial reporting and recordkeeping requirements, examinations and capital standards, and protections against fraudulent or abusive activities, derivatives dealers affiliated with securities or insurance firms are not subject to comparable requirements.

In order to close this regulatory black hole, I intend to introduce legislation later today which will require currently unregulated derivatives dealers to register with the SEC. This bill gives the SEC the tools needed to monitor the activities of these firms, assess their impact on the financial markets, and assure appropriate protections are provided to their customers against fraudulent or manipulative activities. It does not call for radical restructuring of derivatives regulation, but instead focuses laser like on the regulatory gaps that exist in the current regulatory framework.

With this morning's hearing, we will not be focusing on the specific details of this or any particular legislative proposal. It should help inform our deliberations on the key regulatory and legislative options. I look forward to hearing the testimony of the witnesses we have here this morning. I appreciate your willingness to assist the subcommittee.

And I will turn and recognize the ranking minority member, the gentleman from Texas, Mr. Fields.

Mr. FIELDS. Thank you, Mr. Chairman.

I commend you for calling this fourth hearing in the subcommittee's review of the markets for financial derivatives.

In today's complex global economy, it has been suggested that the companies that simply stick to the safe and familiar can find themselves at a serious competitive disadvantage.

It used to be that a company made its best guess about interest rates, raised capital domestically, and then tried to profit by selling its products to customers throughout the world. Corporate executives concern themselves with people management and addressing problems in manufacturing and marketing. When companies succeeded in penetrating foreign market and sold their products overseas, they incurred currency exchange risk. There was little they could do to protect themselves and many times the profits from the sales of goods disappeared as a result of adverse foreign exchange moves.

Today, a much greater proportion of the time of executives is spent on finance. Companies raise capital all over the world. In doing so, they incur interest rate risks based on economies and government policies of many countries. Global economies also mean markets for products are worldwide, and that means exchange risk for anyone doing business in those lands.

Whether they like it or not, corporate executives are faced with a choice of doing nothing or managing the risk of participating in worldwide markets. To do nothing is a form of management that few corporate executives today can adopt. Increasingly, business people are choosing to use the sophisticated risk-management tool of derivatives instruments.

Corporate management coming to grips with these new products represents the greatest challenge it has faced in decades, and some people are doing extremely well. Fortune Magazine has reported that the Texas-based company, Compaq Computer, which is in my congressional district, so successfully used derivatives to hedge its foreign currency risk, that it added $13 million to its bottom line. In the same article, Fortune quotes a director of the worldwide consulting firm, McKinsey & Company, saying 5 years from now an ECFO or treasurer will have to be fully conversant with how derivatives work in order to fulfill their job.

Our witnesses today are the first financial technicians to appear before us. Their testimony will be the first to examine derivative instruments themselves, and I join the chairman in welcoming our distinguished witnesses.

Mr. MARKEY. The gentleman's time has expired.

The Chair recognizes the gentleman from Texas, Mr. Bryant.

Mr. BRYANT. Mr. Chairman, I just want to congratulate you for pursuing this hearing. It is a complicated issue and doesn't make the news in a big way, but it sure is important and it is an area about which I have expressed serious skepticism in the past, and I am just pleased that we are here today.

Mr. MARKEY. The gentleman's time is expired.

The Chair recognizes the gentleman from North Carolina.

Mr. MCMILLAN. Well, I would like to add my welcome to the latest edition of Wall Street Week, and compliment the Chair on his opening statement. I feel certain that he used to be a script writer for Louis Rukeyser. I think the analogy to Lamont Cranston and the "Shadow" is good. Lamont Cranston sounds like a good New England name. But as I recall, it used to open and close with a squeaking door.

And I think the door has been pretty wide open on derivatives in terms of regulation. There are those who would try to close that door, at least slightly change its position. But I hope this morning that those of you here can open the door in terms of understanding, because I think it is an issue on which most of us share a great deal of misunderstanding. I look forward to your testimony, and thank you for coming.

Mr. MARKEY. The gentleman's time has expired.

[The prepared statement of Hon. Richard H. Lehman follows:]

STATEMENT OF HON. RICHARD H. LEHMAN

Thank you Mr. Chairman, I would like to express some thoughts that I have about derivatives markets. These markets are engaged in a zero-sum game based on currencies, equities, or commodities; interest rates; or from a stock market or other index—and there are always winners and losers.

Neither party entering into a derivative contract has control over the outcome of the transaction—they cannot add or subtract value, they can only sit and watch. The problem with this scene is obvious if, for example, the parties engage in an interest rate transaction and the Fed is working its voodoo as it has been recently.

The GAO report that looked at financial derivatives focused on the dealer community because of the need to protect the financial system, namely, the big commercial banks, the major securities firms, and a few insurance companies. The complex connections that develop among these entities through derivatives certainly require review, but I am more concerned about the end users of these products.

We have begun to see big losses being racked up by some of these players: smaller banks, industrial companies, insurers and other financial services firms, pension funds, and governmental units such as municipalities. it is these last two that I am most worried about because their losses have a direct effect on the lives of everyday Americans. If a constituent's pension or a constituent's city takes a hard hit in one of these transactions, I can assure you that he or she will feel the repercussions, and I can assure you that they will be coming to us to do something about it.

In fact, to date, 2 of the top 10 losses in derivatives transactions have been to pensions. I believe that having retirees moneys intermixed with the "big boys" and losing hefty sums is not something we should ignore. The complexity of these derivative financial products is such that many of the people buying them are not fully aware of the possible consequences. That is why we are here today.

The long-term credit risks (counterparty ability to pay the largest loss), the possible market risks (especially in foreign exchange), and the valuation risks (mainly accounting difficulties) are all issues that must be addressed. Today, we will be looking at the accounting side of the ledger. But not all of these issues have to be addressed by this panel or this committee. I am heartened by efforts, such as those by the group of 30, to bring some structure to these constantly evolving transactions. These industry efforts should be given a chance to work.

I would also like to remind the committee that if we rush to legislate wrongfully in some of these areas, we will only succeed in pushing this American-dominated market offshore. All it takes is a computer and a phone, and even I could arrange to set those two instruments up.

Mr. MARKEY. Now we will turn to our panel. And this is the only panel which we have today.

The first witness is Peter Vinella, who is a consultant to Smith Barney Shearson, and is responsible for identifying and executing trade ideas in the U.S. Treasury and derivatives markets. He has multiple degrees in mathematics from the University of California at Berkeley, and is the first of our very distinguished witnesses this morning.

Whenever you feel comfortable, please begin.

STATEMENT OF PETER VINELLA, SENIOR CONSULTANT, SMITH BARNEY SHEARSON; TANYA STYBLO BEDER, PRINCIPAL, CAPITAL MARKET RISK ADVISORS; AND CAMILO C. GOMEZ, SENIOR STAFF MEMBER, LOS ALAMOS NATIONAL LABORATORY

Mr. VINELLA. Thank you, Chairman Markey, members of the committee.

Before I start reading my statement, I just want to point out that derivatives aren't quite as intimidating as they might appear. They actually are used by mathematical laypersons like yourselves, and hopefully at the end of this presentation you will understand a lot more and not be quite so intimidated. Derivatives perform a very necessary service to both corporations and broker-dealers. Unlike cash instruments, derivatives can be fine-tuned to meet the specific investment goals of the end-users. This in turn provides the investor with the most cost-effective and risk averse vehicle, whether it be for the purposes of risk management, funding or pure speculation.

However, because these products can be extremely complex and idiosyncratic in nature, they pose significant problems with respect to valuation and risk estimation. Many of these difficulties arise from the general lack of liquidity in OTC products themselves. This in turn forces the investors to rely on complicated mathematical models for evaluation, rather than on actual market levels.

But very few investors, especially senior managers, are sufficiently fluent enough in the investment and mathematical theory required to understand these models and their limitations. Therefore, many of the controls normally associated with use of cash instruments are not, or cannot be applied directly to derivatives.

Although the use of derivatives in and of itself does not pose a significant threat to the economy or the financial markets in general, large losses due to derivative positions can seriously reduce consumer confidence in the financial system. This is especially true in the case of mutual funds and pension funds. However, regulation and legislation cannot in and of itself reduce this risk. In fact, some of the most common uses of derivatives were developed to circumvent existing regulations.

Consistent with the General Accounting Office's reports concerning financial derivatives, I believe that the most practical and effective form of regulation should focus on the identification and disclosure of the risks associated with derivatives, and not on the limitation of their use.

For the most part, I agree with the majority of findings and conclusions contained in the GAO report. However, many of the recommendations are vague or impractical, especially those regarding accounting standards. And in the following statement, I have not only tried to present the street's view of derivatives and their uses, I have also tried to develop a foundation on which meaningful and acceptable standards can be developed and employed.

Thank you.

Mr. MARKEY. Thank you.

[Testimony resumes on p. 43.]

[The prepared statement of Mr. Vinella follows:]

Suggestions for

Financial Derivative Instruments

Regulation and Legislation

presented to

The House Subcommittee

on

Telecommunications and Finance

June 30, 1994
Washington, D.C.

Peter Vinella
237 Lafayette St. 11w
New York, NY. 10012
(212) 966-9294

1. Summary Statement

Derivatives perform a very necessary service to both corporations (end-users) and broker/dealers Unlike *cash* instruments, derivatives can be fined tuned to meet the specific investment goals of the end-users. This in turn provides the investor with the most cost effective and *risk adverse* vehicle whether it be for the purpose of risk management, funding or pure speculation.

However, because these products can be extremely complex and idiosyncratic in nature, they pose significant problems with respect to valuation and risk estimation. Many of these difficulties arise from the general lack of liquidity of OTC products themselves. This in turn forces the investors to rely on complicated mathematical models for valuation rather than on actual market levels. But very few investors, especially senior managers, are sufficiently fluent enough in the investment and mathematical theory required to understand these models and their limitations. Therefore, many of the controls normally associated with the use of cash instruments are not -- or can not be-- applied directly to derivatives.

Although the use of derivatives in-and-of-itself does not pose a significant threat to the economy or financial markets in general. Large losses due to derivative positions can seriously reduce consumer confidence in the financial system. This is especially true in the case of mutual funds and pension funds. However, regulation and legislation can not in-and-of-itself reduce this risk In fact, some of the most common uses of derivatives were developed to circumvent of existing regulations. Consistent with the General

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For the most part, I agree with the majority of findings and conclusions contained in the GAO report. However, many of the recommendations are vague or impractical, especially those regarding accounting standards. In the following statement, I have not only tried to present the *Street's* view of derivatives and their uses, I have also tried to develop a foundation on which meaningful and acceptable standards can be developed and employed.

2. Uses of Derivatives

In general, the uses of OTC derivatives fall into the following three general categories

- Hedging
- Funding
- Speculation

2.1 Risk management

The most common use of OTC derivatives involves the management of risk of an existing portfolio. In fact, the first derivative contracts were developed to hedge hard commodities such as oil and grains. Other than future and forward contracts, dealers tend to refrain from using derivative products as hedges due to the high cost associated with their use. However, in the case of portfolio managers and corporate treasurers, more complex derivative contracts are employed as risk hedges which can be constructed to closely match their liability projections and at a very low cost.

2.1.1 Example - Refined Oil Delivery

Take the case of an international oil company which has contracted to deliver low-sulfur refined oil to a distributor in Malaysia on the specific date. In order to deliver the oil, it must drill the crude in Alaska, transport the oil to the nearest deep-water port via a system of overland pipes, transport the oil to California for refinement, transport the refined oil to Singapore for final delivery to the firm in Malaysia.

Each step of the process represents a potential risk to oil company: The amount of oil drilled, its quality, the time required for refining and its final yield and quality, the transportation costs, the time required to load and unload, port penalties for early or late arrivals, embargoes and fees, the prevailing price of oil and pertinent currency exchange rates at the time of delivery, all present significant financial risks to the oil company In addition, many other risks exists such as technical failures, labor unrest, internal political turmoil, international tensions and agreements, the credit worthiness of buyer at the time of delivery compound the problem even further. Using traditional cash instruments, it would be nearly impossible to accurately hedge the many risks associated with this type of transaction. However, a complex derivative can be constructed, which for a fee, can do the job quite nicely and economically Viewed as a stand-alone instrument, such a derivative would appear extremely complicated and unintuitive. However, viewed in conjunction with the oil contract itself, the derivative actually ensures profitability for the oil company.

2.2 Funding

Another common use of derivatives is that associated with raising capital. In many cases, a derivative can offer a corporate treasurer a source of capital at very favorable rates From the lender's point-of-view, he can achieve a higher yield than those available in the more common lending markets such as Repo, Money Markets and Corporate Bonds For the borrower, he can use a future revenue stream as collateral, hence giving him access to funds at below market rates. Additionally, the contract can be designed to deliver the funds at a time and in a currency which meets his specific funding needs, hence reducing his overall funding costs and risks

2.2.1 Example - Funding International Operations

A major problem facing a domestic company planning international operations involves non-dollar-denominated funding Assume that a U.S. fast-food chain wishes to open a number of restaurants in Japan. Based on marketing research, the firm can estimate its revenues and costs within specific ranges for the initial five years of operation. From these estimates, it can project the level of funding and their timing required to meet any anticipated shortfalls. However, these figures will be yen-based. Because of the restrictions limiting a U.S. firm from issuing foreign debt, the company would normally be forced to issue dollar-denominated debt exposing it to currency-rate risk. This risk can be offset in some measure by employing simple yen/dollar forward contracts or options; although over such a long time horizon such as five years, this may be uneconomical as well as impractical Additionally, the combination of a bond and forward/option contracts will not optimally match the firm's projected shortfalls over this five year period. However, a complex derivative can be constructed which will not only compensate for the exchange-rate risk, but will explicitly match his liability projections both in level and timing. Moreover, such a derivative can be purchase at a much lower cost than that of the traditional alternative.

2.3 Speculation

The last major use of OTC derivatives is that of market speculation A derivative can be constructed to anticipate any form of market movement imaginable: from pure level changes, to the degree of movement or volatility This is particularly true in the case of cross-market investments in which the strategy requires a position in two or more markets simultaneously. Because of the lack of true margin requirements, OTC derivatives also offer the speculator the most effective and economical investment possible.

2.3.1 Example - Synthetic U.S. Treasury Bonds

U.S. Treasury notes and bonds are characterized by their coupon rate and maturity date They also can be viewed as a series semi-annual interest payments and a final principal payment. By using a series of U.S. STRIPs (zero coupon bonds), a *synthetic* treasury can be constructed to effectively match most of the available notes and bonds. If the synthetic cost less to construct than the actual security, the speculator can purchase it instead of the cash bond, hence increasing his rate-of-return

2.3.2 Example - The other side of the trade

If an end-user employs a complex derivative as a risk hedge, in most cases, the counterparty of trade will be a speculator Here, the speculator is betting that the profits he achieves via the derivative contract will adequately compensate him for the risk he has assumed. In general, most dealers are not true intermediaries in a derivatives transaction, but act as the speculator on the other side of the trade.

2.3.3 Example - Circumventing Investment Regulations

Another form of speculation is actually a method of evading existing regulations and prohibitions Many firms are restricted from investing in certain products and markets. For instance, Canadian public funds must invest a minimum percentage of their assets in Canadian stocks And yet, for the last several years the Canadian equity market as significantly underperformed the S&P 500 index, hence these funds underperform. To achieve higher rates of return, it is not uncommon for Canadian portfolio managers to enter into Swap contracts in which he delivers the return associated with his Canadian stocks plus a small premium in return for return of S&P 500 index. Although he is actually investing outside of Canada, he still technically holds legal ownership of the Canadian stocks and remains in full compliance of the regulations.

3. Purpose of Regulation and Legislation

Regulation and legislation should be intended solely to protect the general public and not the market-savvy professional Derivatives perform a significant role in reducing risk and funding costs associated with investment management. The tremendous growth of the market attests to the importance of derivatives to the financial system at large. Hence, they are of great value to the general population as a whole Any regulation and/or legislation must recognize this implicit value. Also, it is important to recognize the fact that regulation and/or legislation must also reflect the needs and desires of investors in particular. Those which fail to recognize the financial imperatives underlying the use of derivatives and which are solely intended to prohibit their use can be easily circumvented The majority of the players in the derivative markets are large, multinational firms which can easily trade these instruments offshore if necessary. Ill-conceived rules and regulations will not monitor and control this business, to the contrary, it will only force it outside the jurisdiction of this body[1]. Moreover, unnecessary and prohibitive regulations often increase the risk and decrease the liquidity of markets Hence, increasing the profits of a smaller number of dealer firms while increasing the financial risks of the end-users.

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[1] For example, in the early 1990's the Ministry of Finance (MOF) in Japan raised the cash margin requirements on the Nikkei 225 index futures contracts to discourage program trading As a result, activity in the Nikkei contract traded on the SIMEX in Singapore grew significantly and the overall level of program trading remained relatively constant Recently, the MOF rescinded the margin requirements to order to recover the lost business As volume in Osaka picked up, activity in Singapore quickly died and again, program trading levels once again remained relatively constant.

4. Financial Theory

Although the following section is somewhat overly technical, I have presented it in some detail since I believe that it encompasses the best hope of developing a set of standard valuation and risk estimation methods.

4.1 Basic definitions

Although many of the aspects of derivatives are highly technical in nature and lie well outside the scope of the lay-person, an understanding of a few basic issues is important when considering any regulation and legislation.[2] This includes the following definitions

- Derivatives
- Value
- Risk

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[2] Please note that these definitions are not commonly used by most derivative professionals. However, they are more useful teaching aides than the standard industry definitions.

4.1.1 Derivatives

In order to better understand derivatives, it will be helpful to adopt a rather non-traditional approach. Rather than focusing on specific contract terms such as *knock-out options* and *look-backs*, the following, more general, construct will be used:

- An OTC derivative is not truly a security, but is a set of delivery instructions involving commonly trading securities and commodities In most cases these instructions are complex and involve multiple deliveries and contingencies However, every derivative can be decomposed into a set of simple delivery of hard and soft commodities and securities[3].

For example, a corn futures contract is nothing more than an obligation on the part of the seller to deliver a fixed amount of corn on a given date at a specific location as defined at the time the contract was signed.

Although the various types of OTC derivatives are countless, this simple abstraction allows for even the most complicated derivatives to be decomposed into set of simple instructions involving fixed number of known commodities whose economic and financial properties are well understood.

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[3] For the remainder of the discussion, the term *commodities*, will be used as generalization.

4.1.2 Delivery

Using the above definition, we have limited the study of derivatives to an evaluation of the economic impact of delivery on a small set of known commodities. Now, we can proceed with the formal definition of delivery

A *delivery* is uniquely defined by the following information:

- What commodity is being delivered
- How much is being delivered. This is a physical quantity such as number, weight, volume, etc., i.e. bushels of corn.
- When it is being delivered.

  The parties involved. This not only includes the parties that will actually exchange commodities, but those acting as guarantors, custodians and intermediaries such as the bank which issued the buyer's letter-of-credit.
- The delivery instructions. These directions describe exactly how delivery is to take place. This includes rail schedules, loading and unloading instructions, etc

Since the study of derivatives is tantamount to understanding the effects associated with delivery, we can make the following observations There are three major classes of delivery:

- *Fixed*

  In this case, each of the five attributes defined above do not vary over time. That is, delivery is certain and can not be changed except be modifying the contract itself. For instance, a traditional equity transaction executed over the NYSE is an example of fixed delivery. 100 shares of IBM to be delivered to the IBM specialist three days after the trade to settle via DTC.

- *Variable*

  In this case, delivery is assured, yet at least one of the attributes of delivery is not known at the time that the contract was signed. An adjustable rate mortgage (ARM) is an example of a variable delivery. At each reset date, the interest rate is determined via some pre-defined formula Therefore, the amount of interest the lender is going to receive at any point in the future can only be estimated.

- *Contingent*

  In this last case, delivery is not assured. Instead, delivery may or may not take place via a set of pre-defined conditions at the discretion of holder of the contingent claim. An stock option is an example of a contingent claim. The seller of a IBM call option will deliver 100 shares of IBM stock within three days after the buyer's notification to exercise given that the price of IBM equals or exceeds $50 per share at the time of notification. Notification must occur at or before the expiry date[4]

4.1.3 Value

Although value seems on the surface to be a reasonably straightforward concept, it is in reality quite complicated and subtle. This is especially true in the case of illiquid commodities. It is often the case that a commodity trades at a significant discount or premium to its theoretical price. Price is not just a function of the intrinsic worth of a commodity, but it is also a measure of the buyer's and seller's desire to perform the transaction. If the seller must sell, the price will be discounted. If on the other hand, the buyer must buy, the price will be at a premium Since the majority of OTC derivatives are not actively traded in the secondary market, their market value is highly subjective This ambiguity in the value of is one of the greatest obstacles to developing consistent accounting standards for OTC derivatives

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[4] Note in this case, the option is not being delivered but shares of IBM.

Additionally, many securities trade in terms of measures of value other than price. Bonds often trade in terms of yield, options in terms of volatility. In these cases, there is an implicit *one-to-one* relationship between price and these other measures Widely-used among product specialists, these non-price measures are very product specific and are not applicable to other instruments. And yet, as we shall see, risk is often defined not in terms the sensitivity of price, but in terms of these implicit values of prices

In the case of complex derivatives, theoretic value is even more difficult to determine. Most valuation methods involve arcane formulae based on such theoretical foundations as Stochastic Differential Equations. On the surface, valuation can appear highly mathematical and far removed from the understanding of most investors. But in most cases, these methods can be easily understood when viewed from the point-of-view of delivery.

Before we begin that exercise, we need two more definitions including that of value itself.

- *Absolute value* (quantity)

  Absolute value is fixed such as the *number* of shares, the *weight* of gold, the *number* of barrels of oil. Although this is consistent with our definition of delivery above (how much), it is not intuitive to most investors.

- *Relative value* or simply *value*

  This is the common, intuitive definition one normally associates with price. In this case, the value of a commodity is express in terms of another commodity -- most frequently cash The price of gas is the amount of dollars a buyer would be willing to exchange for a gallon of gas. Relative value is simply the ratio (exchange rate) of the absolute value of two commodities -- the number of US$ per gallon of gas.

Although this is all somewhat abstract and unintuitive. This differentiation between a fixed, absolute value and a variable, relative offers a method of analyzing even the most complex derivatives. The valuation method essentially consists of estimating all the deliveries associated with a derivative in terms of absolute value and then expressing these absolute values in terms relative to cash or some other benchmark commodity.[5]

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[5] Although most algorithms used to value derivative contracts are not explicitly stated in terms of absolute and relative value, they are in fact applications of these concepts.

Based on these definitions, we note the following observations:

- Delivery is described in terms of absolute value and not relative value.
- Value is most commonly described in terms of, and is synonymous with, relative value.
- *Valuation* of derivative is equivalent to predicting the flow of deliveries in first absolute terms and then in relative terms.

4.1.3.1 Example - U.S. Treasury Bond

A bond price is known to be equivalent to the net-present-value of its cash flows adjusted for risk such liquidity and financing. In other words, a bond's theoretical price is determined by computing the amount of each of the semi-annual payments, adjusting these amounts as well as the final principal payment to reflect their value in terms a the value of a dollar today, and summing these *discounted* cash flows. This is completely consistent with the above definition of relative value derived from delivery.

4.1.4 Risk

4.1.4.1 Risk measures

Like value, risk is an equally vague term. In the traditional sense, risk is usually associated with losses in value or other uncertainties which affect the wealth of the investor. Hence, risk is usually measured in terms of a securities sensitivity to changes in economic or market conditions such interest rates or exchange rates. Risk also reflects an issuer's or counterparty's ability to deliver against future obligations.

Quite frequently, each product has a risk measure which is uniquely associated with that instrument. In the case of bonds, duration is the common risk measure, while the sensitivity of an option's price to changes in levels of the underlying's price, or *delta*, is a common risk measure for that product. Many of these product-specific risk measures are actually derived from the implicit values defined above. This again causes many difficulties when attempting to develop a consistent and universal definition of risk for complex derivatives. Risk is not a universal truth, but idiosyncratic to both the product and the investor.

Rather than try to equate the various product-specific risk measures, we can greatly simplify the problem by again viewing a derivative as a series of deliveries. In this light, we can define derivative risk as follows:

- *Risk* is the uncertainty of the conditions of delivery at a future point in time.

Employing this definition, risk arises from two major sources, delivery risk and relative value risk. Therefore, risk estimation involves the forecasting of all factors effecting delivery and relative value at any and all points in the future.

4.1.4.2 Sources of risk

The above definition is rarely used in practice Instead, risk is most commonly categorized in terms of adverse changes in price. The most common sources of risk are

- Market changes

  Although the failure of specific institutions has been a crucial cause of financial losses, the majority of losses are due to severe and unexpected market changes This is particular true for leveraged-money firms such as hedge funds and dealers. These loses are magnified since the actual liabilities are not simply limited to level of the margin amounts, but the market amount those margin represent. Since, these securities are used as collateral, leveraged accounts have very little staying power in down markets.

  In many cases, market-related losses were due to speculation and simply pegging the market incorrectly. In other cases, the losses were compounded by improper or inadequate hedging in which the investor was inadvertently expose to market changes. In general, these large market shocks, which occur every three to five years, are almost impossible to predict In many cases, one or more of the large players collapse or fail altogether during these market convulsions.

- Liquidity

  Every trader knows this risk, and yet, it is rarely included in formal risk assessments. The more illiquid the commodity, the greater the difference between its theoretical value and its market value. This risk is exacerbated by the fact that liquidity dries up in bear markets When you need to get out of position the most, you can't. Again, this is especially acute for leveraged-money firms. They simply don't have the staying power to remain in down markets, and yet, this lack of liquidity forces them to incur even greater loses. The lack of liquidity was a major factor in the October 19, 1987 crash. There were simply no bids for either cash or futures instruments. Most investors were forced to ride the market down to the bottom.

- Credit risk

The credit worthiness of a counterparty or issuer is the most common risk associated with complex OTC derivatives. However, this arises more from a concern about pricing a derivative contract than from the dealer's worry concerning the counterparty actually failing to meet his future obligations. Dealers sell derivatives contract at a premium to end-users with poor credit ratings. In other words, the lower the credit rating, the higher the price. If the credit rating of an end-user changes for the worse over the life of a derivatives contract, the dealer will be paying too high a price for that cash flow. Moreover, if the dealer should use the cash flow for collateral, a lower credit rating will reduce the value of the collateral, hence, reducing the dealer's ability to obtain leveraged money. Most dealers, who are also experienced in the high-yield market, are willing to buy debt from risky counterparts if the price is right. They simply do not want to pay too high a price when assuming that risk.

Although corporate treasurers are generally more adverse to credit risk than are the dealers, low-credit contracts offer significantly cheaper money and may be attractive regardless of the risk. Additionally, these poor credit cash flows can be re-bundled in other derivative contracts at higher credit ratings

- Time risk

  Time risk is the most over-looked source of risk in the derivatives market. Even if the market conditions remain constant, a derivative contract's value changes over time It is not uncommon for a firm to experience significant losses to what was thought to be fully hedged positions by failing to account for time decay or time accretion

- Operational

  The last major source of risk concerns the internal operations of a firm engaged in derivative trading. In general, these risks reflect the possible failure of people and/or systems and procedures to perform as expected. Operational risks include the following:

  - Lack of experience
  - Faulty judgment
  - Felonious behavior
  - Poor supervision
  - Insufficient or improper hedging
  - Inaccurate risk measures
  - System failures

On the surface, these risks may appear to be quite different from those associated with delivery. Yet, each of these risk can be stated in terms of delivery in a very straightforward and intuitive manner

4.2 Valuation

Valuation is the act of assigning a relative value to a commodity with respect to cash. In the case of derivatives, valuation is equivalent to determining its market price. However, it is important to realize that the concept of a definitive price does not exist for complex OTC instruments. Prices are subjective and are biased by several factors such as issue size, trading history, general market conditions, differing investment objectives, etc. At best, a price should be viewed only as representing a fair market assessment of the security

One or more of the following three methods can be used to value derivatives:

- Marking-to-market
- Matrix pricing
- Theoretical valuation

4.2.1 Marking-to-market

If a security is actively trading in the secondary market, its value can be determined from the market itself. For exchange traded securities, the last-tick or closing price is used set the price. In the case of the OTC market, one in which the prices are determined via negotiation rather than by auction, prices can be obtained from one of the many interdealer brokers and interbank brokers. This method is good for simple derivative contracts such as options and forward agreements. It is accurate so long as the market remains relatively liquid. If a security trades less than once a week, this method is not very reliable. This is especially true in the case of very volatile markets.

4.2.2 Matrix pricing

If a relatively illiquid security closely resembles a liquid security, its price can be determined via this liquid benchmark. A spread, or basis, is simply added or subtracted from the mark-to-market level of the benchmark to obtain the illiquid security's price. The basis is adjusted periodically to reflect changes in the overall pricing relationship between the security and the benchmark Although this approach is very convenient, it is also highly problematic since by adopting an essentially constant basis, it fails to account for many of the dynamic features of the individual securities themselves.

4.2.3 Theoretical valuation

In most cases, OTC instruments are either too illiquid or too complex to directly employ market levels to determine their price In these instances, the prices must be determined using theoretical models. These models vary greatly from product-to-product and from investor-to-investor. Quite often these models are extremely arcane and are only understood by a mere handful of individuals within a firm. Moreover, many firms have invested large sums developing and refining these models and consider them highly proprietary They are loath to discuss them in public much less offer them for critique and audit. And once again, these valuation models tend to be very product specific and can not be applied to all of derivatives in general

It is also important to recognize the difference between a security's theoretical value and its market price. Although this difference appears to be an arbitrage opportunity, more often than not, it simply reflects the subtle risks associated with the security such as liquidity, financing rates. Therefore, theoretical prices must be explicitly adjusted to account for these risk premiums

Theoretic pricing models fall into the following categories:

- Deterministic

  In this case, the price is determined with complete certainty via some well-defined set of factors This is analogous to determining the position of car given its starting point, direction and speed. In only a few cases, such as financial futures, can deterministic methods be meaningfully employed

- Stochastic

  A stochastic valuation is based not concrete cause and effect relationships but on probabilities The vast majority of derivative valuation methods are based on stochastic processes. The most famous models, Black-Scholes and the Binomial Model are based on the past behavior of the market to predict the future. Although, these models may be theoretically correct, there are many ambiguities associated with their implementation in practice such as the length and frequency of the sample period Currently, no industry standards exist for these parameters

Moreover, many firms believe that they can gain an edge by slightly modifying these models. This lack of systematization, even in the case of relatively well-known models, demonstrates the difficult task of adopting universal risk standards.

- Delivery

When viewed from the delivery point-of-view, valuation is comprised of two steps. First, determine the absolute value at each delivery. Secondly, determine its relative value. This is essentially how most evaluation models work. In the case of Black-Scholes, the difference between the value of the stock and the exercise price at a future point in time is weighted by the probability of the stock achieving that price. This is equivalent to estimating the absolute value of the delivery - the number of shares of stock Next, Black-Scholes states the future value of the stock less the exercise price in terms of a dollar today. This is equivalent to formulating the relative value of the stock first in terms of future dollars and then in terms today's dollar.

By adopting delivery, we can value any derivative contract -- not matter how complex -- by first estimating the absolute value of each delivery and then estimating its relative value in terms of today's dollar.

4.3 Risk estimation

Most commonly, risk estimation evolves quantifying price moves due to changes in certain market and economic conditions. In general, the basic forms of risk estimation include:

- Sensitivity analyses

  Once valuation models have been constructed, it is possible to analyze the effects on the theoretical price of varying each of the parameters used in the formula In the case of an option, the sensitivity of its price change with respect to changes in underlying's level and volatility is used as standard risk measures. However, these risk measures are explicitly dependent upon the model used *and* its implementation. In other words, is not sufficient to simply state an option's delta as a risk measure. The model and the data used to construct the model and compute the price must also be stated Again, this demonstrates the difficulty in formulating accounting standards

- Correlations and risk equivalents

  In some instances, risk is measured in terms of the degree of movement between a security and some benchmark. These are very common risk metrics in the case of cash securities. *Beta*, or the correlation between the price movement of a stock and the S&P 500 index, is the standard domestic equity risk measure Although it is sometimes applied to futures contracts, this type of risk measure does not lend itself to complex derivatives

- Scenario analyses

  Scenario analyses when used in conjunction with delivery valuation offers the most reasonable and flexible form of risk estimation for complex derivatives. Since value depends only on five factors at each delivery point, we can estimate the uncertainty in the price of derivative by simply varying each of the factors at each of delivery point using a *Monte-Carlo* simulation technique. We can limit each factor within some reasonable range or we can stress the contract to the upper and lower bounds of factors. We can use the resulting volatility of price levels as a measure of risk. We can also measure the sensitivity of the price due to changes in specific factors and specific delivery points.

4.4 Risk management

Risk management is more than simply assessing the risk associated with a derivative position. It entails establishing and maintaining all the professional practices and procedures necessary to evaluate and control risk. These include:

- Implementation of meaningful risk controls and practices
- Development of accurate risk measurements
- Timely measurement of risk
- Periodic review of practices, procedures and performance

5. Technology

Because derivatives are highly mathematical in nature, technology plays a key role in their use. Beyond the software used to analyze the price of the derivatives themselves, systems must be capable of gathering and evaluating data from a wide-variety of sources including macro-economic, firm-specific (balance-sheet), portfolio and general internal accounting information. To date, only a small handful of firms have systems which can even marginally perform such tasks in batch, much less in real-time. Even with the most sophisticated systems available, firms can not accurately determine their global risk exposure at any single point-in-time

Currently, the development of such systems is a high priority at many of the largest broker/dealers In many instances, these systems costs in the tens-of-millions of dollars It is unlikely that many corporations and other non-dealer users of derivatives will be able to spend such vast sums on internal systems Presently, there are few, if any, commercial providers of these systems on a time-sharing basis.

Quite frankly, even if consistent and meaningful accounting and risk management standards could be set, the currents systems would not be capable of supporting them

6. Dangers

Again, derivatives play a critical and beneficial role in the investment process. However, their misuse can led to large losses of capital and -- more importantly -- a loss of consumer confidence in the financial systems. Although it is unlikely that the failure of a single firm will cause a general financial panic, many of the largest users of derivatives such as banks and insurance companies employ leveraged public money which is insured by the U.S. government There is no reason to suspect that another shock on the scale of the S&L crisis will occur; yet public funds may be required in the event that one or more of these firms does indeed fail due to derivative losses

The major cause of concern which can lead to financial failures can be broken down into the following categories:

- Accounting deficiencies
- Ineffective risk measurement and controls
- Inadequate supervision
- Market conditions

6.1 Accounting deficiencies

Current accounting standards do not adequately state the value nor the risk associated with many derivative products. Not only are these procedures lacking, the external auditing firms themselves are not able to directly handle derivatives. Since value and risk are very subjective, most accounting firms simply rely of the holders of the derivative to supply the requisite information including price and risk estimations. At the very least, the algorithms, data and all assumptions used in the value and risk assessment process should become part of the audit record.

6.2 Ineffective risk assessment

Although the term *risk management* is used with great regularity within the industry, the accurate and material risk management of a firm's portfolio is a rarity. This is due in large part to amorphous nature of investment risk and the difficulty of implementing complex the risk controls. The major factors of ineffective risk assessment are as follows:

- Incorrect definition of risk

  Risk itself is a very non-standard concept which varies greatly from firm-to-firm. In general, most risk measures are product-specific and do not readily apply themselves to complex derivatives. For instance a bond's risk might be expressed in terms of duration, an options in terms of volatility, etc. In general, no single product-specific risk measure can be extended. Even the simplest definition of risk associated with U.S. Treasury securities, *duration-* is misused to describe interest rate risk from a strictly mathematical point-of-view

- Imprecise measurement of risk

  Even if risk has been adequately defined, its actual measurement would still be difficult. Quite often, this measurement incorrectly states the true risk associated with a derivative Moreover, risk measurement involves not only the evaluation of the risk of a specific derivative contract, but requires estimating the exposure of the firm's complete portfolio to all market factors. Viewed in terms of delivery, every future condition effecting delivery must be *known* to accurately compute risk.

- Ineffectual hedging of risk

  Given a precise definition and measurement of risk, losses often occur to supposedly *perfectly* hedged positions This is primarily due to fundamental misunderstanding on the part of the investors that the hedge is not perfect, but is at best an approximation valid only at given markets conditions and at a given time. Even in an environment free of significant market shocks, risk exposure will grow over time. Hedges have to be reevaluated not only subsequent to major market movements, but also on a periodic basis independent of market levels.

- Faulty implementation of risk controls (systems and data)

  Assuming that risk can be correctly defined, measured and hedged, there exists a multitude of operational factors which can affect risk management. Rarely are internal systems adequately debugged and audited. It is quite common for such systems to produce erroneous results or fail altogether. Additionally, much of data used is rarely inspected and cleaned.

6.3 Inadequate supervision and controls

The greatest risk to a firm is not due directly to market shocks, but is a result of the professionals failure to adhere to sound investment policies and procedures. As is the case with most complex systems, human error is the great cause of failure. The most frequent sources of errors include:

- Incorrect use of the products.
- Inexperience traders and end-users. In fact many of the derivative traders have never experience a bear market.
- Senior managers who are not able to grasp the products and adequate supervise their use

6.4 Market conditions

Although a derivative appears to be perfectly hedged, in practice there is always some risk exposure since it is uneconomical and impractical to constantly hedge. Market shocks do occur periodically This is especially true in the derivatives markets which is highly global in nature When these shocks take place, risk exposure, hence, significant losses can mount dramatically. Moreover, it is nearly impossible to get out of an adverse position in these markets.

Most hedged portfolios are still susceptible to the losses a result of abrupt changes in the market due to the following factors

- Lack of liquidity
- Overly regulated markets
- Failure of a counterparty

7. Comments on the GAO Report

For the most part, I agree with the majority of findings and conclusions contained in the GAO report. This is especially true with regards to its unequivocal position in favor of maintaining a positive environment in which the derivatives market can grow and remain innovative. The report also stresses the international nature of the derivatives business Ill-conceived domestic regulations will only force the business offshore. This in turn would only further exacerbate the risk disclosure issue. The report also correctly identifies the major issues vis-à-vis risk management: increased management oversight, the need for new accounting principles and methods, the need for robust, comprehensive risk management systems, and most importantly, a reengineering of the complete U S financial regulatory system.

However, many of the specific recommendations, particularly those concerning valuation and risk metric standards are impractical, if not altogether, impossible. Most importantly, the report fails to recognize cash flow accounting (i.e. delivery) as the only practical measure of derivative risk exposure. All the derivative activity included in the report are stated in terms of notional amounts. By its very definition, a notional is not a financial obligation. It is simply the principal amount by which the subsequent cash flows are determined. It is the cash flow associated with the notional which defines the true risk Cash flow accounting is the only natural reporting procedure viable for complex derivatives.

Also the report fails to recognize that the dealers themselves are also major end-users through their triple A rated subsidiaries. In most cases, it is impossible to find a true end-user whose liability stream is exactly that of another end-user. Therefore, the most common counterparty to a risk hedge derivative is a speculator. Although some corporate treasurers do speculate in the markets, this activity is most commonly associated with a dealer. In addition to pure speculative positions, dealers also use these cash flows to construct new derivative contracts which can be sold at premium to other end-users.

The report also understates the tremendous difficulty in developing and installing broad firm-wide risk management procedures and systems. For the most part, the majority of senior managers are not fluent in the use of derivatives. Moreover, the businesses themselves lack the basic infrastructure to handle complex derivatives. The businesses need to undergo a major reengineering effort before such comprehensive risk management systems are feasible.

I am somewhat surprised by the general negative response -- and its ferocity -- to the report by the professional derivatives community at large. I must admit to being personally quite adverse to government intervention into the financial markets in general. But many of the GAO recommendations are being actively being implemented in an uncoordinated fashion in a large number of firms.

I do want to stress the report's suggestion for global coordination and cooperation in defining any regulations and/or laws regarding derivatives and their use. The largest and most experienced practitioners of derivatives are foreign-based firms. They have had more than their share of major losses and finance crises as well as the lion's share of the profits This experience, in addition to fundamentally global nature of the business itself, only emphasizes the need for global collaboration.

8. Recommendations

Note: some of the following recommendations are included in the GAO report. I have restated them for added emphasis

8.1 General

- The derivatives business is an important activity within the U.S. financial system Its growth and diversity should be encouraged and not unduly limited.
- Regulation and legislation should be geared towards disclosure and professionalism.
- Review all regulation and legislation on a periodic basis. In is not unusual for a new regulation or law to fail to meet the expectations of its authors. Rather than simply leaving them on the books, all new regulations and laws should be reviewed one year after their adoption to evaluate their effectiveness. Moreover, the financial markets change quite frequently and the regulatory systems must be able to quickly adapt to meet these needs.
- Capital reserve requirements should be based on cash flow liabilities and not notional amounts. In addition, these reserves should be set independent of counterparty netting
- Public funds should be forced to adhere to the spirit of existing regulations and not be allowed to use derivatives as a means of circumvention.

8.2 Accounting

- Adopt cash flow accounting as the standard reporting methodology.
- Establish scenario testing as the risk measurement benchmark.
- Develop a simple 1-to-100 risk weighting which represents the overall volatility as determined via scenario testing.
- Require periodic stress testing of the portfolios.
- Standardized auditing and ratings procedures. A triple A rating for a CMO does not guarantee the yield of the security. It simply states the ability of the issuer to make all required payments. The ratings should reflect the true financial risk to end-user and not simply the credit worthiness of the issuer.
- Require that all algorithms, software and data become part of the audit trail.
- Require external auditors to perform stress tests on end-user portfolios based on a fixed set of changes in common financial and economic conditions.
- The profit and loss associated with a risk hedge as well as its risk measurements should be directly linked to those of the underlying positions.

8.3 Supervision

- A new license should be created similar to the NASD Series 7 for the trading of complex OTC derivatives. A similar accreditation should be instituted for senior managers and board members. A new licence should be created to certify a firm-wide risk manager.
- At least one board member and/or senior manager should be very knowledgeable in derivatives and their use.

8.4 Disclosure

- Dealer should be required to state the scenario risk profile as part of the OTC contract.
- Corporations should state their derivative assets and liabilities in terms of cash flows as part of the balance sheet reports.

Mr. MARKEY. Our next witness is Ms. Tanya Beder, who is a principal of Capital Market Risk Advisors in New York. Prior to founding this consulting firm which specializes in derivatives and capital markets, she was a Vice President of the First Boston Corporation. She also holds several advanced degrees in finance, mathematics, game theory, and operations research from both Harvard and Yale.

We welcome you. Whenever you feel comfortable, please begin.

STATEMENT OF TANYA STYBLO BEDER

Ms. BEDER. Thank you.

Chairman Markey, members of the subcommittee, I am pleased to appear today to discuss financial derivatives as part of the subcommittee's consideration of this topic. At present I am one of two senior principals and founders of Capital Market Risk Advisers, a firm specializing in swaps, derivatives and capital market strategies.

In this capacity as well as in my previous employment, I have worked extensively with dealers, end-users, regulators, industry groups, accounting firms, rating agencies and law firms regarding all aspects of the derivatives market. Capital Market Risk Advisers work in the derivatives and capital markets arena is global, with current clients ranging from Asia to Europe, to the United States and Canada.

My testimony today represents my personal views based on my experience as an early founder and participant of the derivatives market since 1982.

In the interest of keeping my opening statement brief, I have attached to the statement two articles I authored for publication this August, the "Realities of Marking to Model," and "Three Key Challenges in Independent Risk Oversight," plus the text of a speech I delivered in Switzerland in June of 1994 on a panel with Andrew Crockett of the Bank for International Settlements.

Also attached are several articles published by the cofounder of Capital Market Risk Advisors, Leslie Lynn Rahl, and selected graphics from recent speeches to a broad array of industry participants.

Derivatives play a valuable role in the market. The Group of 30's market survey released March 29th, 1994, asked 80 dealers and 80 end-users: "How valuable are derivatives in controlling risk in your organization outside of any dealer activity?" Forty percent responded imperative. An additional 38 percent said very important, and 18 percent responded important. A mere 4 percent of the respondents answered that derivatives were of little value or not very important in controlling risk.

Derivatives also play a valuable role in our personal lives. They are at the core of many otherwise unavailable loan, mortgage, investment and mutual fund products used in today's average household.

Nevertheless, after a decade of relatively few publicly disclosed derivatives losses, the pace of publicly reported losses has increased. Disclosed losses for the first 10 years of the derivatives market totaled $2.1 billion, while for the 12 months ended Friday, July 8th, losses totaled $6 billion.

Losses should always be reviewed in a context. Capital Market Risk Advisors estimates the derivatives market stood at $18 trillion in notional amount at year-end 1993. The implied loss rate is less than one-twentieth of 1 percent, when compared to notional amount. Some prefer the use of replacement cost for sizing the derivatives market.

Assuming an average replacement value of 3 percent of notional amount, the derivatives market stands at an estimated $540 billion. No matter which measure, the implied loss rate for the past 12 months is small, standing at 1.1 percent of replacement value. Note that these loss figures are extremely conservative estimates.

It is important to observe that virtually all losses have been manageable relative to dealers or end-users' capital. However, of the 34 disclosed losses, 2 were too large relative to capital. Askin Securities was liquidated, eliminating $600 million of investors' funds. Metallgesellschaft lost over $1.3 billion, leaving bank creditors to bail them out.

These losses should be reviewed in several context. First, thousands of dealers and end-users have executed derivatives to great benefit in reducing risk, borrowing cheaper funds, or achieving higher returns.

Second, the Askin and Metallgesellschaft losses involved exchange-traded derivatives, which are already regulated.

Third, it was incorrectly forecasted market moves, and not the instruments themselves, that caused the losses.

To the credit of good, old-fashioned management prudence, many boards of directors or the top management of dealers and end-users have either already formed independent risk oversight functions or have called upon firms like mine to assist them in establishing such supervision. The IRO function is at the heart of tracking, monitoring and managing not only derivatives risks, but all other risks faced by firms.

The IRO trend is so significant that the International Swaps and Derivatives Association will devote an entire 3-day conference in New York at the end of July to independent risk oversight, risk measurement, and risk management. Several hundred dealers and end-users, plus dozens of regulators, accountants, lawyers, rating agency professionals and others are expected to attend.

I will now turn to the specific questions posed by the subcommittee. First, I will address the subcommittee's question regarding the derivatives market risks, plus whether they are understood and controlled by dealers and end-users. The list of potential risk variables for derivatives and all other financial instruments is extensive and depends upon type and application.

In addition to basics such as credit, interest rate, currency equity and commodity risk, there are dozens of other risks, ranging from basis, yield curve, daylight and model risk, to regulatory accounting and personnel risk. I believe that the majority of risks are understood and controlled by dealers and end-users. This is borne out by the extremely low level of derivative losses to date.

In my opinion, the vast majority of dealers and an increasing number of end-users have begun to place the deserved focus on items such as independent risk oversight functions and the creation of specific written risk management policies. The clear intent is to create early warning systems for systems gone awry.

Second, I will address the subcommittee's question on the issue of how values of OTC derivatives are determined and uncertainties associated with such valuations. There are four broad categories for OTC derivatives, ranging from "transparent" to "you are the market." For example, exchange-traded futures and 5-year, plain vanilla interest rate swaps would fall into the category of "transparent prices," as prices can be easily obtained from public sources. Interest rate swaptions, with specific strike prices and maturities of less than 10 years, would fall into the category of "telephone quotes."

Mr. MARKEY. We only ask for 5 minutes of opening testimony. If you could try to summarize your opening statement, then we could get into some question and answers, it might be helpful for all the members, if possible.

Ms. BEDER. Certainly. I would submit the rest of this. Unfortunately, there were 13 questions in the list, so answering those in 5 minutes is difficult.

But in summary, I believe that the dealers and the end-users have taken tremendous steps to control the risks in the market and certainly knowledge is a learning process for all. I think if you observe the losses, that there have been very few repeat offenders.

And in our experience, certainly we have seen people tremendously increasing their oversight of the markets. And in my opinion, no additional regulation is called for at this time.

Mr. MARKEY. OK. Thank you.

[Testimony resumes on p. 78.]

[The prepared statement of Ms. Beder follows. Certain attachments referred to therein are retained in subcommittee files.]

Testimony of

Tanya Styblo Beder

Principal,
Capital Market Risk Advisors, Inc.

Concerning Financial Derivatives

Before the Subcommittee on Telecommunications and Finance
United States House of Representatives

July 13, 1994

Chairman Markey and Members of the Subcommittee:

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In the interest of keeping my opening statement brief, I have attached to this statement two articles I authored for publication this August, *The Realities of Marking to Model*, and *Three Key Challenges in Independent Risk Oversight*, plus the text of a speech I delivered in Switzerland in June 1994 on a panel with Andrew Crockett of the Bank for International Settlements Also attached are several articles published by the co-founder of Capital Market Risk Advisors, Leslie Lynn Rahl, and selected graphics from recent speeches to a broad array of industry participants.

Derivatives play a valuable role in the market. The Group of Thirty's market survey released March 29, 1994, asked 80 dealers and 80 end-users "how valuable are derivatives in controlling risk in your organization outside of any dealer activity?" 40% responded "imperative," an additional 38% said "*very* important" and 18% responded "important." A mere 4% of the respondents answered that derivatives were "of little value" or "not very important" in controlling risk. Derivatives also play a valuable role in our personal lives. They are at the core of many otherwise unavailable loan, mortgage, investment and mutual fund products used in today's average household.

Nevertheless, after a decade of relatively few publicly disclosed derivatives losses, the pace of publicly reported losses has increased. Disclosed losses for the first 10 years of the derivatives market totaled $2.1 Billion, while for the 12 months ended Friday, July 8, losses totaled $6.0 Billion. Losses should always be reviewed in a context. Capital Market Risk Advisors estimates the derivatives market stood at $18 trillion in notional amount at year-end 1993. The implied loss rate is less than one-twentieth of 1% when compared to notional amount. Some prefer the use of replacement cost for sizing the derivatives market. Assuming an average replacement value of 3% of notional amount, the derivatives market stands at an estimated $540 billion. No matter which measure, the implied loss rate for the past 12 months is small, standing at 1.1% of replacement value. Note that these loss figures are extremely conservative estimates.

It is important to observe that virtually all losses have been manageable relative to dealers' or end-users' capital. However, of the thirty four disclosed losses, two were too large relative to capital: Askin Securities was liquidated, eliminating $600 million of investors' funds. Metallgesellschaft lost over $1.3 billion, leaving bank creditors to bail them out. These losses should be viewed in several contexts. First, thousands of dealers and end-users have executed derivatives to great benefit in reducing risk, borrowing cheaper funds, or achieving higher returns. Second, the Askin and Metallgesellschaft losses involved exchange-traded derivatives, which are already regulated. Third, it was incorrectly forecasted market moves and not the instruments themselves that caused the losses.

To the credit of good, old fashioned management prudence, many boards of directors or the top management of dealers and end-users have either already formed Independent Risk Oversight functions, or have called upon firms like mine to assist them in establishing such supervision. The IRO function is at the heart of tracking, monitoring, and managing not only derivatives risks but all *other* risks faced by firms. The IRO trend is so significant that the International Swaps and Derivatives Association will devote an *entire* three-day conference in New York at the end of July to "Independent Risk Oversight, Risk

Measurement, and Risk Management." Several hundred dealers and end-users plus dozens of regulators, accountants, lawyers, rating agency professionals and others are expected to attend.

I will now turn to the specific questions posed by the Subcommittee.

1. First I will address the Subcommittee's question regarding the derivative market's risks, plus whether they are understood and controlled by dealers and end-users.

The list of potential risk variables for derivatives and all other financial instruments is extensive, and depends upon type and application. In addition to basics such as credit, interest rate, currency, equity, and commodity risk, there are dozens of other risks ranging from basis, yield curve, daylight and model risk to regulatory, accounting and personnel risk. I believe that the majority of risks are understood and controlled by dealers and end-users. This is borne out by the extremely low level of derivatives losses to date. In my opinion, the vast majority of dealers and an increasing number of end-users have begun to place the deserved focus on items such as the Independent Risk Oversight function and the creation of specific, written risk management policies. The clear intent is to create early warning systems for risk gone awry.

2. Second, I will address the Subcommittee's question on the issue of how values of OTC derivatives are determined, and the uncertainties associated with such valuations.

There are four broad valuation categories for OTC derivatives ranging from "transparent" to "you are the market." For example, exchange-traded futures and 5-year, plain vanilla interest rate swaps would fall into the category of "transparent prices" as prices can be obtained from public sources. Interest rate swaptions, with specific strike prices and maturities of less than 10 years, would fall into the category of "telephone quotes" as prices are most often obtained from dealers via a telephone call. A six year interest rate swap, typically priced via interpolation from the prices for on-the-run five year and seven year swaps, would fall into the "uses model assumption" category. A structured note with a return based on 10 times the difference between DM LIBOR and the USD 10 year constant maturity treasury rate plus PIBOR squared, would fall into the "you are the market" category. Over 99% of the derivatives market is accounted for by the first three categories. This means that all dealers and end users, with the appropriate training and systems, can value by themselves, 99% of the derivatives in the market place. Pricing differentials for these is typically less than 10%, with most differentials in the 1 or 2 basis point area. A basis point is 1/100 of 1 per cent. For the other 1% of derivatives, prices can be obtained at a minimum from the selling dealer. To demystify the more complex, financial instruments, the IAFE, the International Association of Financial Engineers, is organizing a training seminar and discussion forum for the press and interested parties on this topic.

3 Third, I will address the Subcommittee's question regarding common causes of derivatives losses and steps dealers and end-users should take to minimize the potential for such losses in the future.

A review of the losses disclosed over the past 12 months indicate that three areas merit greater focus by dealers and end-users: model risk, unexpected market moves and insufficient management oversight. While it would be impossible in today's time frame to discuss all of the steps that dealers and end-users should take to minimize potential future losses, I will make three specific recommendations. Again, these recommendations apply to all financial market activity and not just to derivatives. First, every dealer and end-user should have specific, written policies regarding the use and execution of derivatives. Violation of the policies should carry meaningful penalties for employees, consistent with the impact of any offense. Second, end-users should require satisfactory detailed information from dealers seeking their derivatives business so that there is sufficient understanding of the structure of a transaction prior to execution. I recommend this be part of the end-user's specific, written policies. This is consistent with prudent practice for any significant business decision. The onus should be on board of directors and senior management to increase knowledge, to implement controls, to shore up risk management policies, and to verify adequate capital exists to meet the requirements of any significant financial commitment. Third, end-users and dealers should require that derivatives be presented and approved under the specific, written policies in their *deleveraged* equivalent. In other words, a $100 million derivative transaction that is leveraged 15 times would be approved under the pre-established guidelines -- or presented to the board for approval -- as a $1.5 billion transaction rather than as a $100 million transaction.

4. Fourth, I will address the role of "stress testing" and simulations.

The role of stress testing and simulation is vital in managing derivatives risk. The awareness of these tools by dealers and end-users has increased dramatically over the past 12 months. Reflective of this trend, many software vendors to the derivatives industry either have incorporated or are in the process of incorporating stress testing or simulation capability into their packages. Capital Market Risk Advisors estimates that 15% to 20% of dealers currently use some form of Monte Carlo or other simulation in managing derivatives risk, and that this will increase dramatically over the next 12 months. While stress testing and simulation are an important part of current best practices in risk management, they are not sufficient to manage and monitor derivatives risk or any other type of risk. It would be impossible to design a single model or single system of controls which would properly contain risk for all dealers or end-users In my review of hundreds of transactions and dozens of dealer and end-user portfolios, the crucial risk factors vary. Two key questions rarely have the same answer:

- “Which variables, given a small move, cause a large move in price or risk valuation?
- “Which variables important to your position or portfolio have a high likelihood of change?

Accordingly, it is impossible to mandate the appropriate simulation across any group of firms. Equally important to proper models for a particular dealer's or end-user's derivatives activity, is sufficient training, knowledge, oversight, and prudence. It is important to keep in mind that risk unto itself is not bad. What must be avoided are risks taken without proper compensation, risks left unmanaged, or risks too large relative to capital.

5. Fifth, I will address what steps regulators should take regarding potential systemic risk posed by derivatives, dealer capital reserves, risk management and controls, and means to curb the potential for abusive practices

I recommend regulators focus on two key aspects of systemic risk: settlement risk and cross-border regulatory risk Derivatives and their related hedges, such as the purchase or sale of Treasuries, add an estimated $2 trillion in flows to the daily global settlement system. If non-derivatives flows are added, in the matter of two to three days, funds equaling the size of the United States GNP flow through our system. Settlement risk is simply the risk that some or all of the payments are meaningfully delayed. This has the potential to cause wide-spread fails, which could result in liquidity crises for dealers and end-users. Note that settlement risk pertains to *all* financial transactions, and not just derivatives.

I recommend regulators focus on two aspects of cross-border regulatory risk. The first is the risk of United States firms facing restrictive or expensive regulation relative to that imposed by other countries. From a competitive standpoint, this would have serious consequences for many dealers and end-users in the global market place, so should be evaluated with this in mind. The second is the risk created by the lack of international harmony in the commercial law environment surrounding the market. Of vital importance is the need for regulators to agree on what constitutes the acceptable netting of risk exposures as well as to address other key cross-border issues, for example bankruptcy and default procedures. Uncertainty over netting and other issues creates significant risks for dealers and end-users who execute transactions that cross borders, or who execute transactions with counterparties who have significant cross-border exposure. Again, note that this risk applies to all cross-border financial transactions and not just derivatives.

Regarding dealer capital reserves, I believe it would be impossible to design a single standard of capital requirements that would be both reasonable as well as ensure that adequate capital exists for all dealers. Nor do I think that additional regulatory capital standards are called for in the market at this time. The degree of capital required greatly depends upon the type and mix of derivatives in a portfolio at a particular point in time. Clearly dealers must insure that they have adequate capital to contain risk and meet liquidity needs. I believe dealers do this prudently at this time.

Regarding risk management and controls, I believe these should exist at the level of each firm. I agree with many of the common recommendations of the Group of Thirty and regulators who have studied the derivatives market to date. Specifically, I recommend that dealers and end-users:

- Require board level audit and oversight
- Require specific written policies
- Institute proper internal controls
- Perform mark-to-market daily, at a minimum

- Establish reserves for credit, liquidity, operations, and model risk
- Stress test their portfolio on a regular basis.

Firms and regulators face the common challenge that "best" practices in risk management constantly evolve. Any attempt to freeze the process will likely be more detrimental than beneficial. Imagine how different the evolution of a fundamental market such as mortgage securities would be if what was once a best practice, twelve-year average life, had been mandated as the risk approach. Given the rapid, useful developments in "best" practices, it is vital that a dynamic process be possible for dealers and end-users to avail themselves of the best methods at any point in time.

Regarding a means to curb the potential for abusive practices, the studies by the Group of Thirty, the CFTC, the Office of the Comptroller of the Currency, the General Accounting Office, the National Association of Insurance Commissioners, the Leach Report, and this Subcommittee's hearings have served as a valuable wake-up call that all dealers and end-users must do their part. In addition to the individual assessments that have been conducted or are being conducted by both dealers and end-users, two associations are currently reviewing this area. ISDA recently formed a director's committee to evaluate a potential code of conduct pertaining to swaps and derivatives. SIA, the Securities Industry Association, recently formed a committee to review sales practices relating to derivatives. In conjunction with a self-risk assessment regarding all financial exposures, I recommend that end-users implement the recommendations previously outlined in my remarks, including but not limited to independent risk oversight, specific written policies, stress testing of market as well as model assumptions, deleveraged study of transactions, and obtaining adequate information from the selling dealer. Needless to say, while one can implement controls and procedures, it is virtually impossible to protect against the clever manipulation by individuals, wishful hearing by end-users, or the lack of prudence by the buyer of any financial instrument.

Thank you, Mr Chairman. I now look forward to answering your questions.

As derivatives receive more scrutiny, bank directors, managers, and regulators all will be asking how closely valuation models mirror reality. In this article, Tanya Styblo Beder describes ways to ensure that you are not vulnerable to your derivatives models.

Derivatives: The Realities of Marking to Model

Tanya Styblo Beder

Few dispute the critical role derivatives and financial engineering play in the capital markets. However, many question whether the risks are well understood after the stunning losses reported by Procter and Gamble, Metallgesellschaft, Askin Securities, Gibson Greetings, and others. Since the mid-1980s, losses disclosed by end users and derivatives dealers have topped $5 billion. While this number is small relative to the trillions in derivatives and structured securities outstanding, the losses are large for some: Askin Securities was liquidated, incinerating $600 million in investors' funds. Metallgesellschaft lost more than $1.3 billion, leaving bank creditors to bail it out. In contrast, the losses by Procter and Gamble and Gibson Greetings, while unfortunate, were manageable relative to capital.

For corporations and financial institutions, the losses raise difficult issues in derivatives pricing, valuation, suitability, and accountability. During the past 12 months, regulatory scrutiny of derivatives risk picked up dramatically. In the United States, reports, recommendations, regulations, or proposed legislation were released by the Commodities Futures Trading Commission, the Securities and Exchange Commission, the Office of the Comptroller of the Currency, the National Association of Insurance Commissioners, Congressman Jim Leach (R-IA), Congressman Henry Gonzalez (D-TX), and others. Outside the United States, regulators acted in kind (*Exhibit 1*) Proposed and actual regulations apply to a broad range of market participants including dealers, banks, securities firms, mutual funds, municipalities, insurance companies, and corporations. Regulatory stance runs the gamut from "no legislation is needed but players should police themselves proactively,"[1] to "derivatives are the new wild card in international finance and micromanagement is required to avoid disaster."[2] Overall, United States regulatory activity focuses on capital at stake, risk assessment, accounting and other disclosure, responsibilities of senior management plus the board of directors, and cross-regulator coordination, both national and international (*Exhibit 2*). As regulators continue their scrutiny of the market and politicians introduce derivatives legislation, senior management, the board of directors, rating agencies, and auditors have stepped up questioning and oversight. The year 1994 may well be remembered as "the year of the self-assessment." For many, the result has been creation of an independent risk oversight (IRO) unit.

A key challenge for the IRO unit is to protect the institution's capital against the realities of marking to model versus marking to market. While many risk reports detail mark-to-market exposure, the reality is that only the model's estimate of mark-to-market exposure is provided. Is this a concern for your firm?

Tanya Styblo Beder is a principal of Capital Market Risk Advisors, New York

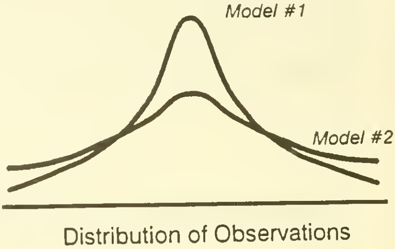
Exhibit 1
Derivatives Risk Recommendations

☐ Group of Thirty
☐ Commodity Futures Trading Commission
☐ Comptroller of the Currency
☐ Congressmen Leach and Gonzalez
☐ National Association of Insurance Commissioners
☐ General Accounting Office
☐ Bundesbank
☐ Bank of England
☐ Ontario Securities Commission
☐ FFIEC.

Exhibit 2
Regulatory Consensus on Derivatives

☐ Improve market transparency
☐ Require board level audit and oversight, including specific written policies
☐ Institute proper internal controls
☐ Dealers should mark to market daily, at a minimum.
☐ Dealers should forecast cash and funding requirements.
☐ Mandatory training for regulatory examiners
☐ Regulatory-sponsored educational programs
☐ Standardize documents and cross-border uncertainty
☐ Adopt a single standard for netting

Exhibit 3
Mark-to-Model Risk
How portfolio value varies under two models



The answer is that assumptions are a necessary evil in the world of derivatives models and risk systems. At least six disparate models are used to price many common derivatives. Given the same raw data input, a wide variance of results exists across models when mark to market is calculated. Because each model calculates its own estimate of "mark to market," it is more accurately termed "mark to model." Virtually all market participants are exposed to mark-to-model risk (*Exhibit 3*). The degree of exposure depends upon the type and concentration of derivatives and financially engineered structures in your portfolio. Note that a portfolio is not necessarily asset based; it may also be liability based or asset plus liability based.

> *Assumptions are a necessary evil in the world of derivatives models and risk systems.*

This article will illustrate common problems created by the reality of marking to model plus practical solutions you may use to expose the risks posing a threat of loss (*Exhibit 4*). While reserves for presettlement risk, credit risk, market risk, and administrative risk are employed by many derivatives market participants, few employ a reserve for model risk. Calculation of a model reserve is the topic of the last section.

Marking to Market versus Marking to Model

The calculation of the mark-to-market value of derivatives positions is widely practiced in the derivatives marketplace. This practice conforms with the Group of Thirty's (G-30) recommendation in *Derivatives: Practices and Principles*, published in summer 1993. Recommendation Two states that "dealers should mark their derivatives positions to market, on at least a daily basis, for risk management purposes." In addition to the recommendations in the 1993 report, the G-30 Global Derivatives Study Group conducted a survey of industry risk-management practice, *Appendix III: Survey of Industry Practice*. The findings regarding 80 dealers and 80 end users were released on March 29, 1994. Since the survey was mailed before completion of the G-30 1993 recommendations, it does not examine market practice regarding the G-30 recommendations. However, it provides many useful insights regarding "mark to market" and the IRO function (*Exhibit 5*). In particular:

☐ More than 90% of the respondents had or planned to establish a risk-management function *independent* of trading and market making.

☐ Eighty-nine percent of the respondents determined the market value of their deriv-

Exhibit 4

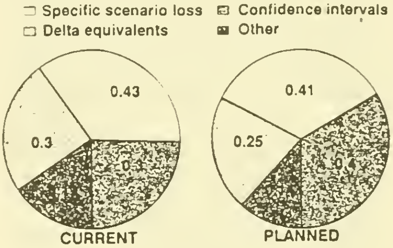
A Galaxy of Risks

A partial listing of the risks of derivatives

Technology risk
Basis risk
Political risk
Management risk
Personnel risk
Optional risk
Concentration risk
Contract risk
Systems risk
Limit risk
Rollover risk
Hedging risk
Interpolation risk
Extrapolation risk
Credit risk
Market risk
Interest-rate risk
Prepayment risk
Reinvestment risk
Volatility risk
Netting risk
Currency risk
Commodity risk
Equity risk
Call risk
Yield curve risk
Curve construction risk
Raw data risk
Regulatory risk
Tax risk
Legal risk
Daylight risk
Capital risk
Liquidity risk
Bankruptcy risk
Collateral risk
Modeling risk
Cross-market risk
Systemic risk
Time lag risk
Knowledge risk

Exhibit 5

How Do Industry Practitioners Measure and Determine Limits for Derivatives Market Risk?



Source: G-30 Survey of Industry Practice

atives portfolio *on a daily or intraday basis.*

☐ Ninety-eight percent of the respondents indicated they were concerned about *inadequate* risk quantification.

☐ Ninety-eight percent of the respondents indicated they were concerned about *inadequate* auditor knowledge.

☐ Ninety-one percent of the respondents indicated they were concerned about *lack of control* over models.

☐ Risk-management *models figured prominently* in the causes of negative profit and loss variance for derivatives results versus expectations. In fact, model risk accounted for two-thirds of the reasons for negative profit and loss variance, including the following: 68% cited *input error* in their models; 61% cited *algorithm errors* in their models; 62% cited *programming errors* in their models; 58% cited *systems failure.*

Standard guidelines for the calculation of mark to market were not set forth in the G-30 study. Nor have they been provided by regulators or other industry groups such as the International Swaps and Derivatives Association or the International Association of Financial Engineers. The lack of a standard likely is due to the disparity of mark-to-model values across dealers. If a single model were to be adopted by all, the existing variance across models would cause a dealer or end user to experience a significant write-off in the switch to a new model. A second concern is that the premature selection of a standard model may stymie more accurate methods of derivatives pricing, risk management, and market evolution. For example, less than 15 years ago "good market practice" included such techniques as the following:

☐ modeling interest-rate swaps as bonds, using a single discount rate to establish value;

☐ modeling interest-rate caps and other optional products under two states of the forward forward curve and volatility, "0" and "1";

☐ modeling conventional mortgages as 12-year average life securities;

☐ evaluating interest-rate exposure under static yield curve states such as "flat," "steep," and "inverted";

☐ using the capital asset pricing model to analyze expected return.

Today, each of these would be considered substandard relative to available techniques and good market practice. The IRO unit thus must monitor developments in good market practice to ensure that the firm avails itself of advancements in risk systems and models

Given the disparity of models, the IRO or, in the absence of IRO, the appropriate oversight committee at the level of senior management or the board of directors must determine the accuracy of its mark-to-model approach. Even for highly liquid products, values produced by models may vary significantly. For example, if a short-maturity, plain-vanilla interest-rate swap is priced via the futures market under one model and the cash market under a second model, different mark-to-model values will occur. The results vary dramatically when the cash and futures markets diverge. And this is one of the simplest derivative products!

Know Your Model

For the IRO unit, two key challenges are to confirm that all relevant risks are fully reported and that an early warning system exists for risks gone awry. For most dealers and some end users, credit risk is well reported and monitored, with reserves and credit support such as collateral calls, material adverse change clauses, right of termination at threshold values, or termination events in place in the event that risk exceeds preestablished levels For most dealers and a handful of end users, administrative risk is also well reported and monitored, with reserves and reports in place for managing transactions through maturity, sale, or termination

Currently, an estimated 15% to 20% of dealers use Monte Carlo or other simulation models to report and manage market risk.

Policies for reporting and managing market risk are less consistent across dealers and end users. As derivatives and financial engineering incorporate greater leverage, increased optionality, and more exotic underlying markets, more dealers and end users are turning to simulation, stress testing, and confidence intervals as the current best-practice approach to managing market risk. Currently, an estimated 15% to 20% of dealers use Monte Carlo or other simulation models to report and manage market risk The balance of dealers and end users employ previous-generation risk-management models such as delta equivalents or scenario analysis combined with stress testing The advantages of simulation are significant. Simulation makes possible dynamic, rather than static, "what-if" scenarios and broader capability to analyze multiple-variable shifts as required by the complex dimensions of derivatives risk.

Analyzing model risk is crucial no matter which market-risk approach your corporation or financial institution employs. Embedded assumptions are a necessary part of any model. This area has only recently gained the attention of management, board members, regulators, rating agencies, and IRO. What are the key assumptions in your model(s)? Answering these five questions will help you know your model:

- ☐ What variables, given a small move, cause a large move in price or risk valuation?
- ☐ Which variables important to your portfolio have a high likelihood of change?
- ☐ What variables or exposures are considered to offset each other? By how much?
- ☐ How wide is the variance of results produced by other common models compared to yours?
- ☐ What is your model's acceptance in the marketplace? Does the majority of the market use the same data inputs and modeling assumptions (for example, raw data, curve building, interpolation techniques, bid-ask levels, volatility assumptions, etc.)?

Note that as increasingly complex optionality and exotic underlyings have been engineered into derivative products, the divergence of answers produced by the various models has increased.

Common Problems in Marking to Model

Data Integrity

All models require raw data to perform the valuation function. This presents many issues that must be addressed by the user, overseer, and auditor of models. For example:

- ☐ Which data source should be used?
- ☐ What time of day should data be pulled into the model?

☐ Is independent verification of data possible on both a time and cost-efficient basis?

On-the-run U.S. Treasury securities are used in virtually all models, and quotations are available from many sources. While many management reports use end-of-day pricing, quotations vary by as much as five basis points across sources for end-of-day pricing. Thus, the selection of raw data source can translate into a 2% valuation differential on a 10-year position and even more for longer or off-the-run positions. Similar complications exist for other baseline markets outside the United States. Multicurrency and multi-time-zone portfolios present additional issues for the user, overseer, and auditor of models. For example, should the USD/GBP exchange rate be input into the model at London's close or New York's close? If the book is passed globally, in which time zone(s) should mark to model be performed? Should the most-liquid data source or a more-recent but less-liquid data source be used? For newer, or exotic, products, how can inputs be independently verified when your firm's trading desk is the market?

Curve construction

Virtually all models discount the cash flows of the derivatives portfolio to determine a current or estimated value. The quality of the model's output therefore depends upon the following:

☐ the certainty of the future cash flows;

☐ the selection of one or more appropriate discount rates;

☐ the liquidity of the derivatives or financially engineered securities in the portfolio.

If the derivative or structured security cash flows have a high likelihood of varying from expected cash flows, the quality of the model's output may be poor. Examples of such securities are mortgage-based securities with caps or derivatives such as path-dependent floaters that require a terminal value due to the time horizon of an analysis. With respect to the discount rate, it is often difficult to select the appropriate rate. One common practice is to use a risk-adjusted, zero-based yield curve; however, a particular yield curve may not accurately reflect the range of asset/liability alternatives available to the firm. The importance of liquidity was demonstrated last year by the Louisiana State Employees' Retirement System, with $3 billion under management. After purchasing several interest-only and principal-only mortgage tranches, the fund discovered upon trying to resell the securities a 10 percentage point bid-and-asked spread. Many exotic, leveraged, long-dated, or large-sized derivatives positions require a significant liquidity adjustment when constructing the curve.

Extrapolation and interpolation

Most models use benchmarks to construct curves as well as to price products. Hence, a hypothetical benchmark portfolio provides base pricing. The benchmarks are then used to price the other derivatives and derivatives-linked securities. Interpolation or extrapolation are used to price derivatives away from the benchmarks. For derivatives that are difficult to dissect into liquid, cash-market components, the output of this method may be poor. An example of the limitations of interpolation is "pricing" an 8-year interest-rate swap in a model that includes a 5-year and a 10-year benchmark price. Depending on the shape of the yield curve, straight-line versus an alternate interpolation technique (for example, spline) will produce substantially different mark-to-model values for the 8-year swap. A second example is a model that views a 10-year interest-rate swap as a series of forwards. For long-dated swaps, there is only a hypothetical cash market price for the implied forwards (for example, the forward rate on three-month Libor in 9 years). As in the case of interpolation, extrapolation of known markets produces mark-to-model risk because there is no guarantee the market will trade to your model.

Algorithms and functions

Dealers and end users employ numerous algorithms and functions in models. For the same type of derivative, especially options-based derivatives, models produce diverse mark-to-model values when given the same raw data. This is true for both proprietary and off-the-shelf software. For example, consider a leveraged inverse floater that resets quarterly at 18% minus three times three-month Libor, subject to a minimum coupon of zero, with a maturity of 2 years. When the embedded cap is away from its strike (that is, the yield on the floater is above zero), its price behavior is similar to that of a coupon-bearing security that matures in 18 years. When the cap is in effect, the duration changes significantly. Consistent pricing information can be particularly difficult to obtain, especially for options Frequently, dealers employ different definitions of "in-," "out-," and "at-the-money" and use different volatility models, thereby producing widely disparate prices for the same options. Further complicating the ability to compare derivatives prices are different practices by OTC derivatives dealers for the use of bid, mid, and asked pricing, generation of the yield curve and discount rates; type of interpolation; adjustments to price for illiquid or exotic products; and methodology with respect to premiums and discounts. In addition, some dealers differentiate pricing by BIS weightings of counterparties.

Market scenarios

A key challenge for the user, overseer, and auditor of models is to determine how much the results of the firm's model vary from the results of other models that may set market prices. In accordance with good market practice, most dealers and an increasing number of end users employ models to perform an expected return or maximum exposure measurement in addition to the current mark to model. Common scenarios analyzed range from "most probable" to "worst-case." The quality of such measurement depends on the ability to select appropriate scenarios. As experienced during the stock market crashes and the Gulf War, it is difficult to predict an item such as "maximum" volatility. The increasing complexity and optionality of many derivatives has made scenario selection considerably harder. Dozens of factors affect price and possible outcomes, making the ability to select "expected" or define "maximum" virtually impossible.

> *As experienced during the stock market crashes and the Gulf War, it is difficult to predict an item such as "maximum" volatility.*

In accordance with the G-30 recommendations regarding good market practice, many dealers "regularly perform simulations to determine how their portfolios would perform under stress conditions." The report further recommends that stress tests should be designed "to measure the impact of market conditions, *however improbable*, that might cause market gaps, volatility swings, or disruptions of major relationships, or might reduce liquidity in the face of unfavorable market linkages, concentrated market making, or credit exhaustion." Some dealers and end users evaluate risk by analyzing small parallel shifts in the yield curve and other variables to test sensitivity. Current good market practice recommends going far beyond this. Stress testing should include small as well as large moves for all relevant variables This is due to the fact that for some portfolios, the *absence* of volatility may actually be more stressful than large moves.

While a number of dealers stress test market assumptions, few stress test model assumptions. Stress testing model assumptions is recommended, whether your firm's model employs scenario analysis, delta equivalents, or simulation to evaluate capital at risk. In the case of simulation, the information obtained by stress testing market and model assumptions depends heavily on the following:

☐ the selected probability approach (typically Monte Carlo or binomial);

☐ the ability to determine price, cash flows, and other returns under a specific market scenario;

☐ the ability to select appropriate scenarios.

If a derivative's or derivative-linked security's cash flows have a high likelihood of varying from expected cash flows, or if catastrophic-type option results are possible, the quality of simulation may be poor.

Option-adjusted spread models also take into account indeterminate cash flows by incorporating the value of embedded options as well as other-than-flat yield-curve scenarios. The quality of the output of option-adjusted spread models depends on the following factors:

☐ whether shifts in the yield curve are somewhat parallel;

☐ the probability weight assigned to the embedded option;

☐ whether the default risk of the security is consistent.

Given that dealers have varying methods for generating probability assumptions, interest-rate paths, and forward risk-free rates, different option-adjusted spreads are frequently calculated for the same security. Accordingly, dealers and end users should stress test such model assumptions to determine the limitations of the option-adjusted spread model as a consistent gauge of relative value.

Stress Testing Model Assumptions

Numerous model assumptions should be stress tested to determine the need for model reserves. The answers to the five questions discussed above in the section "Know Your Model" should be answered for model variables as well as for market variables. Common model variables to stress test include the following:

- ☐ *Fallacy of composition.* This may occur when a compound derivative is separated into its pieces, with each piece separately priced or hedged: There is no guarantee that the pieces will behave as the combined whole, a lesson learned expensively by certain participants in the interest-only and principal-only mortgage-based securities markets.
- ☐ *Nonoptimal data inputs.* This may result in inferior performance measurement. For example, an index that uses currency prices from Europe's close may be inappropriate as a benchmark for a U.S. mutual fund pricing redemptions at the U.S. market's close.
- ☐ *Sensitivity to curve construction.* This often changes over time, along with the derivatives composition and cash flow concentration of the portfolio. For example, bulges of certain types of derivatives at certain maturities will change over time, if for no other reason than the passage of time. In addition, forward curves are often smoothed to eliminate the jagged shape produced by strict mathematics. Depending on the points used to construct the curve, the switch over from futures to cash, the degree of smoothing, and the source of underlying market data, mark-to-model values will vary.
- ☐ *Faulty portfolio assumptions.* This may result in improper measurement and is a particular problem for illiquid derivatives. In many such cases, the assumption is made that "this behaves like...." As in the case of commercial real estate and many other loans in bank portfolios, erroneous price assumptions can create significant problems. In addition, market benchmarks change over time. For example, the swaption market initially traded off of the cap/floor market but later established itself as an independent market.
- ☐ *Faulty grids.* These often create measurement problems. Examples are the use of straight-line interpolation between 5- and 7-year swap rates to establish 6-year swap rates and extrapolation of 10-year swap spreads to determine the level for longer-dated swaps. Another example is the use of different switching points from "out-of-the-money" to "at-the-money" and "in-the-money."
- ☐ *Simulation bands that are too narrow.* This may result in the failure to establish proper reserves for simple as well as complex derivatives. During the currency crisis in Europe, some foreign exchange market participants discovered that their trading bands for currencies were too narrow. Others discovered that cross-hedging assumptions such as the effectiveness of hedging "strong" currencies with each other produced unexpected losses.
- ☐ *Unproven netting assumptions.* This provides one of the largest model and risk-measurement challenges. Although the Bank for International Settlements supports certain forms of netting and industry groups such as the International Swaps and Derivatives Association support wider forms of netting, an international infrastructure does not exist to resolve a significant market dislocation or dispute. It has yet to be determined whether a long position in one country will be able to be liquidated at will against a short position in a second country with the blessing of the respective national regulators. Therefore, IRO, senior management, and the board must determine the degree to which netting should be assumed in profiling risk.
- ☐ *Other.* Many other macro considerations have yet to be fully established. For example, while legal opinions or revisions to laws have been obtained regarding bankruptcy netting within several countries, netting across borders remains uncertain. Test cases in cross-border bankruptcies

such as Olympia & York and BCCI have yet to be resolved. Such situations are potential wild cards, as certain rulings or capital requirements could alter current market pricing significantly. Yet-to-be-determined accounting and other market infrastructure also possess the ability to alter market economics.

Reserving for Model Risk

It is vital that comparisons be conducted within a risk-equivalent system: A less-risky derivative producing the same return as a riskier derivative should be the preferred position. In addition, a derivative that places less capital at risk while producing the same return should be preferred. Model risk requires similar analysis and treatment as credit risk, administrative risk, and market risk (*Exhibit 6*).

For some products, independent verification of the mark-to-model value is possible. For example, market prices for products may be obtained from a variety of data services and publications such as Telerate, Reuters, Bloomberg, *Swaps Monitor*, or *Risk*. For other derivatives, data services and publications do not exist, but it may be possible to verify market value by obtaining quotes from multiple dealers. IRO, senior management, and the board of directors should maintain caution if only one or two quotes are obtained: A recent survey of relatively established derivatives such as swaptions reveals that model valuations vary by as much as 6% on relatively plain-vanilla transactions. Other derivatives cannot be value-verified at all: Many highly structured, exotic, or newer derivatives are unduplicated in the market. Stress testing of the theoretical mark-to-model value is recommended for all.

> *Derivatives and financial engineering have increased the efficiency of the markets, improved the ability to manage risk, and provided benefits to both dealers and end users.*

There is little doubt that derivatives and financial engineering have increased the efficiency of the markets, improved the ability to manage risk, and provided benefits to both dealers and end users. However, due to the tremendous technological advances in finance, we have arrived at a point at which only complex measurements are up to the task of monitoring risk. IRO, senior managers, the board, and regulators cannot use complex measurements easily or cheaply. Whether a combination of simpler measures can contain risk without disasters remains to be proven. Stress testing both market and model assumptions plus establishing reserves for all relevant risks is not only good market practice but prudent.

Exhibit 6

Setting Model Reserves

- ☐ Determine whether the majority of risk comes from a few derivatives, for example, new instruments or exotics
- ☐ Determine the variance of results, both within and outside of target confidence intervals
- ☐ Analyze the standard deviation of the differential across models
- ☐ Reserve the desired cushion between your mark-to-model value and those determined by other models
- ☐ Analyze new instruments and exotics separately as appropriate.

Given the recent losses by firms such as Procter and Gamble, Metallgesellschaft, Askin Securities, and Gibson Greetings, will there be greater regulation? Key forces will be the tendency of regulation to seek the least common denominator—suggesting more stringent regulation—and the need for regulation to consist of simple measures that can be employed widely—suggesting less stringent regulation and, inevitably, loopholes.

Given the growing blur of product separation across financial institutions and the rapid pace of innovation, there may be little choice but to regulate concepts rather than specifics. For example, regulators might require information about any risk that places a given amount of capital at risk, rather than reports on pre-established types of risk. To promote continued prudence, IRO or one or more outside directors might be required to be fully knowledgeable about the risk position as well as the firm's models and assumptions.

If the infrastructure imposed is uneven or too expensive, dealers and end users may find themselves in a curious place. Given the huge role derivatives and financial engineering play, they may find that the very products that provided a solution during the last decade to better manage risk and provide greater profitability may become their greatest problem during the next. Building an IRO unit with proper emphasis on mark-to-model risk can help ensure that this will not happen to you

Notes

[1] Compiled quote from recent public comments by Securities and Exchange Commissioner J Carter Beese, Comptroller of the Currency Eugene Ludwig, Federal Reserve Board Governor Susan Phillips, and Commodities Futures Trading Commission Acting Chairman Sheila Bair

[2] Compiled quote from recent public comments by Jim Leach, ranking minority member of the House Banking Committee, Henry Gonzalez, and other politicians Echoing this sentiment is Edward Boehne, president of the Philadelphia Fed "We are likely to hear increasing calls for more comprehensive regulation of derivatives as their use continues to grow If there were to be a large bank failure or widespread bank losses attributed to derivatives, I expect you would see a swift public response"

Seminars and Conferences

American Bankers Association (202) 663-5107

Annual Convention and Banking Industry Forum, October 8-11, New York.

BMA Investment Management and Trust Marketing Conference, October 23-26, Boston.

American Institute of Certified Public Accountants (800) 862-4272

National Conference on Banking, November 3-4, Washington, D.C.

Bank Administration Institute Foundation (800) 323-8552

Essentials of Bank Accounting, September 12-13, Chicago; October 13-14, New York.

Treasury Operations and Systems Management Conference, September 19-20, New York.

Fiduciary Tax Conference, October 3-4, Chicago.

Community Bank Controllers Conference, October 3-4, Chicago.

Asset/Liability and Treasury Management Conference, October 24-26, New York.

Executive Enterprises (800) 223-0787 (outside New York state); (800) 831-8333 (in New York state)

SEC Accounting and Financial Reporting Course, August 1-3, Orlando, Florida; August 3-5, Denver; September 19-21, New York; September 28-30, Houston, Texas.

The 1994 FASB/SEC Update: The Definitive FASB Course, August 18-19, Orlando, Florida; September 26-27, Atlanta.

Accounting for Derivatives, September 8-9, Boston.

The 18th Annual SEC Accounting Institute, September 8-9, Boston.

EDGAR: Phasing into the SEC's Electronic Filing System, September 22-23, New York.

The Bank Tax Course, September 22-23, Washington, D.C.

(continued on page 49)

10 Commandments of Risk Management

Follow these thou-shalts and thou shalt have a good chance of convincing your board of your prudent use of derivatives.

In the wake of well publicized losses suffered by large U.S. companies like Procter & Gamble, Air Products, and so on, from using interest rate swaps and derivatives, treasurers are volunteering—or are being asked—to reassure their boards that derivatives are used prudently within their companies.

The following 10 commandments will help clarify the use and control of derivative instruments.

Provide in-depth [illegible]ing in derivatives and risk management for senior management and the board of directors.
Regulators look to senior management and the board to understand, manage, and control the use of powerful but risky derivatives. A survey released in March conducted by the Group of 30 (G30), a Washington, D.C., group headed by former chairman of the Federal Reserve Paul Volker, indicates that 29% of users feel their boards have "little understanding" of derivatives and that they have significant work to do to improve their knowledge. Training can be provide by the treasury department, outside risk consultants, accounting firms, and your banker.

2

Conduct a G30 self-assessment risk management audit.
The recommendations released by the G30 Study Committee in July 1993 form an excellent basis for assessing your practices against best practice in the market and ensuring that detailed programs are in place to manage risk. Subsequent to the release of the G30 recommendations, most regulators have stated that companies should conduct such a self-assessment. (See sidebar.)

PHOTO: UNIPHOTO

Early warning systems should identify significant growth in exposure or changes in the markets.

3

Develop written policies for the use of derivatives.
Define a well-articulated strategy that clearly addresses suitability issues and ensures that policies are in place and are reviewed and updated as needed. A policy statement should address: the purpose of the hedging program; products and hedging strategies that are appropriate; who is authorized to commit the company to what type and size trade; the responsibilities of the board, the CFO, and the treasury staff; the counterparty credit limits and procedures for measuring and monitoring exposure; the mark-to-market frequency and methodology; reserve policies for expected future costs, such as unearned credit spread, close-out costs, investing and funding costs, model variance, and administrative costs; approach to stress testing (scenario analysis vs. multiple scenario analysis vs. simulation) and frequency; responsibilities of independent risk oversight (IRO); responsibilities of internal audit; sensitivity and concentration limits; accounting approach (hedge vs. mark to market or model).

Policies should be updated at least annually. Early warning systems should identify significant growth in exposure or significant changes in the markets that require a noncyclical review of policies and limits.

4

Implement a strong independent risk oversight function.
Create an IRO function, which typically reports to the board of directors, as recommended by the G30 Study Committee. This function should be independent of the treasury, with authority and appropriate analytical tools to ensure adherence to prudent risk and policies. This unit should be

BY LESLIE RAHL

Group of Thirty

In July 1993, the Group of Thirty (G30), a Washington, D.C.-based supranational financial consulting group, came up with a set of recommendations intended to strengthen the management of derivative instruments for dealers and users and to head off calls for regulation of the industry.

Recent corporate losses, however, have fueled congressional efforts to regulate the derivatives industry, although so far no serious proposals have been made to regulate the corporate use of derivative instruments. A *Treasury & Risk Management* survey of corporate derivative instruments (Spring 1993) revealed that 83% of corporate users agree with the G30 conclusion that current self-regulation is satisfactory.

Henry Gonzalez
of Texas

The most recent proposal is a bill introduced by Henry B. Gonzalez, a Texas Democrat who is chairman of the House Banking Committee, and Jim Leach of Iowa, the ranking Republican member on the committee. It combines, in a somewhat milder form, separate derivatives legislation that each had introduced earlier this year. The bill applies only to the banks and other institutions regulated by the House Banking Committee, including credit unions and government-sponsored housing agencies, such as the Federal National Mortgage Corp.

It orders the bank regulatory agencies to develop consistant standards relating to derivatives for capital, accounting, disclosure, examinations, and suitability. It would force them to create a plan to get information on derivatives activities of banks quickly in the case of a crisis.

The bill would force a bank's management and directors to approve derivatives activity. And it would order regulators to seek widespread cooperation from other countries in creating uniform international standards on derivatives.

Washington watchers believe the bill has little chance of passing in this session because of time pressures, but that it will be introduced again in the next session.

In the meantime, the G30's suggested practices for corporate users of derivative instruments have gained wide following. The suggestions were:

◆ Ensure that derivatives use is consistent with risk management and capital policies approved at the highest level of policy and decision making.

◆ Value derivatives positions at market at least for risk management purposes.

◆ Quantify market risk under adverse market conditions against limits, perform stress simulations, forecast cash investing and funding needs.

◆ Assess the credit risk from derivatives activities based on frequent measures of current and potential exposure against credit limits.

◆ Reduce credit risk by broadening the use of multi-product master agreements with close-out netting provisions and by working to ensure legal enforceability of derivatives transactions with and across jurisdictions.

◆ Establish market and credit risk management functions with clear authority, independent of the dealing function.

◆ Authorize only professionals with the requisite skills and experience to transact and manage the risks, as well as to process, report, control, and audit derivatives activities.

◆ Establish management information systems sophisticated enough to measure, manage, and report the risks of derivatives activities quickly and precisely.

◆ Voluntarily adopt accounting and disclosure practices for international harmony and greater transparency, pending the international standards.

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responsible for conducting independent mark to markets; establishing, measuring, and monitoring adherence to credit, market, and product limits; stress testing; and reviewing and approving pricing models and valuation systems.

5

Institute stress testing and simulation.
The ability to analyze how a derivatives portfolio will behave under adverse conditions is critical. Stress testing should identify your sensitivity to: 1) interest rates, currencies, and so forth. 2) assumptions—that is, yield curve creation methodology, correlation, out of the money (OTM) vs. at the money (ATM) volatility, and so forth. 3) model. Sensitivity to model refers to sensitivity of the profit & loss and risk profile for a transaction to the model selected (Black Sholes, Hull and White, and so forth). The same transaction will have a different value, depending on the assumptions and the pricing model selected.

Because a variety of assumptions and models are in wide use, it is a good idea to reality test your valuation and ask: What if I made different assumptions or selected a different model? If the answer is that it would have little impact on the value of your portfolio, you do not have to worry whether you've chosen the best assumptions and model. If changing the assumptions or model makes a material difference, you should carefully review your decisions and also consider a model reserve to reflect the likelihood that if you wanted to unwind a position before maturity, the actual market price might vary significantly from your mark to model.

6

Mark to market regularly.
Mark positions to market regularly even when you use hedge accounting. To the extent that you rely on subjective assumptions and nonstandard models, be aware that you are "marking to

model" rather than "marking to market." Determine the sensitivity of your valuation to your assumptions and to your model.

7

Establish adequate reserves.
Develop accounting policies that reflect appropriate reserves for credit, liquidity, close-out costs, administration, and mark-to-model risk. The reserves for a five-year plain vanilla interest-rate swap with a AAA counterparty will be much lower than for a ten-year index amortizing swap with a BBB counterparty or even a five-year interest-rate swap with a AAA counterparty that resets weekly.

8

Establish credit, product, and portfolio sensitivity limits.
Create an appropriate limit structure and ensure that limits are reviewed regularly. Be sure that actions exist for exception reports because there may be instances in which over-limit conditions require your swift attention.

A Few Words on the Subject

◆ **Derivative** A financial instrument whose value is derived from a promise to buy or sell or swap an underlying asset. Interest rate swaps for example, are used to create synthetic floating or-fixed-rate debt at a lower cost, and foreign exchange forwards and options are used to hedge foreign exchange exposure.

◆ **Hedge** An action that reduces risk, usually at the expense of potential reward. A long position in one security may be partially offset with a short position in a related security.

◆ **Independent Risk Oversight (IRO)** An independent unit responsible for ensuring adherence to prudent risk limits and policies.

◆ **Leveraged Swaps** Swaps in which the payout is tied to a multiple of the notional principal.

◆ **Mark to Market** Valuation of your portfolio based on quotes received from dealers and brokers about where you could unwind your positions.

◆ **Mark to Model** Valuation of your portfolio based on updating basic market data, such as yields, spreads, and volatilities, and running your own models to value and price the transaction, such as getting market quotes on five- and seven-year swaps and assuming where six years and two months will trade, or getting a quote on a 5/3 8% swaption and using your model to determine where a 5/2 8% swaption would trade.

◆ **Option** A stipulated privilege of buying or selling a stated property, security, or commodity at a given price (strike price) within a specified time frame.

◆ **Risk Management** The activities of the professionals who enter into transactions and hedge away (or retain) resulting risks.

◆ **Risk Measurement** The oversight activities of management, who evaluate, monitor, and contain, when necessary, the risk management activities of the company.

◆ **Speculation** Buying or selling stocks, commodities, and so forth, hoping to take advantage of an expected rise or fall in price.

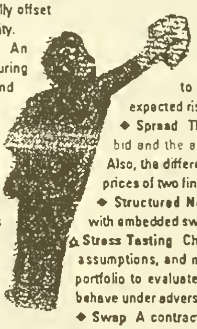
◆ **Spread** The difference between the bid and the asked price in any market. Also, the difference between the yields or prices of two financial instruments.

◆ **Structured Notes** Medium-term notes with embedded swaps and derivatives.

◆ **Stress Testing** Changing the market levels, assumptions, and models used to value your portfolio to evaluate how your portfolio would behave under adverse market conditions.

◆ **Swap** A contract to exchange a stream of periodic payments with a counterparty. For example, an interest rate swap is an exchange of fixed interest payments for floating rate payments.

◆ **Volatility** A measure of the tendency of a market price or yield to vary over time. Volatility is said to be high if the price, yield, or return typically changes dramatically in a short period of time.



9

Define relevant roles and responsibilities.
Ensure clear accountability. Policies should clarify who is authorized to commit to trades and who is responsible for acting if credit, market, or product limits are exceeded. It is also important to establish clear guidelines regarding who is authorized to engage in a new product, which clearly define "new product." Is a leveraged swap a new product? Is a swap against LIBOR squared a new product?

and that

10

Establish early warning systems. A well-versed board of directors will want to know the answers to the following five critically important questions:

1) What variables, given a small move, would cause a large move in price or risk valuation?
2) Which variables important to your portfolio have a high likelihood of change?
3) What variables or exposures are considered to offset each other?
4) How wide is the variance of results produced by other commonly used models versus yours?
5) What is your model's acceptance in the marketplace? Do the majority of models use the same data inputs and modeling assumptions as yours? If you are not using a model in wide commercial use, calibrate your model against others by getting as many quotes from dealers and brokers as is possible and seeing if your model can replicate the market.

Leslie Rahl is a principal at Capital Market Risk Advisors, based in New York, newly formed by the merger of Leslie Rahl Associates and Capital Market Advisors.

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Russell S. Reynolds, Jr., Chairman

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Stretching beyond the role of "auditor" to protect interests of all the corporation's stakeholders.

8

Derivatives– a director's dream or nightmare? ①

By Leslie Rahl, Principal, Capital Market Risk Advisors, Inc

Waking up and seeing your company's name in the Wall Street Journal announcing a multi million dollar unexpected loss is probably a director's worst nightmare. The directors of Procter & Gamble, Mead and Gibson Greeting, among others, have had this nightmare recently as a result of their derivatives activities.

How can you prevent yourself and your company from repeating their mistakes?

The Bank of England in its April 1993 paper, "Derivatives: Report of an Internal Working Group," recommended that "supervisors should consider the extent to which senior management do (or are likely to) understand the derivatives area of a firm's business."

A guiding principle might be that, where this activity is important to a bank, at least two members of the board (including the Finance Director) should be sufficiently knowledgeable to be able to insure that the business is controlled effectively. In addition, managers at any level who receive 'risk reports' should be able to interpret and evaluate them.

When Dennis Weatherstone, the Chairman of Morgan Guaranty and the Chairman of the G30 Study Committee on Derivatives (a working committee of the Group of Thirty, a prestigious Washington based organization headed by Paul Volker), presented the study in July of 1993, he commented that he believed Recommendation #1 on the role of senior management was the singlemost important.

On March 7, 1994 the Wall Street Journal published an op-ed piece by former Securities and Exchange Commission Chairman Richard Breeden entitled "Directors: Control Your Derivatives." The piece was an indictment of corporate complacency about derivatives practices. Breeden warned senior management and directors that they needed to shape up or face a one-way ticket to financial disaster.

It is clear the regulators are looking to senior management and to the Board to un-

Continued on next page

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Derivatives, continued

derstand, manage and control the use of powerful but risky derivatives. In fact, the long-awaited GAO study, finally released on May 18th, echoes the focus on the responsibility of the board of directors and states clearly that "primary responsibility for risk management rests with boards of directors and senior management."

When asked, however, in the March '93 survey conducted by the G30 Study Committee that was used as input for the formulation of the G30 recommendations, 29 percent of the respondents didn't feel that their board was sufficiently knowledgeable in derivatives.

Some Famous Losses

1985

$254MM – General Reinsurance – caps

1987

$350MM – Merrill Lynch – PO MBS Volatility

$125MM – Societe des bourses Francaises – Futures speculation

$600MM – Various – Authority, Hammersmith & Fulham

1991

$380MM – Klockner – Commodities hedging

$275MM – Allied Lyons – Currency options

ABN – AMRO – MTM valuation; Chemical – CP caps

1993

$1,456MM – Kashima Oil – Currency derivatives

1994

$50MM – Louisiana State Retirement IOs/POs

$1,300MM – Metallgesellshaft – Commodities hedging

$20MM – Gibson Greetings – Leveraged derivatives

$157MM – P&G – Leveraged DM/USD spread

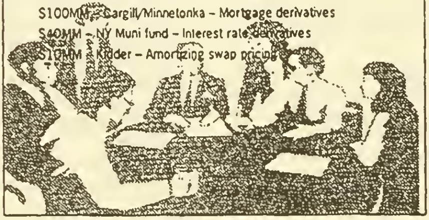
$600MM – Askin Securities – MBS model

$12MM – Mead Corp. – Leveraged swap

$100MM – Cargill/Minnetonka – Mortgage derivatives

$40MM – NY Muni fund – Interest rate derivatives

$10MM – Kidder – Amortizing swap pricing



In addition to being held accountable if hedging programs go awry; boards are increasingly being held accountable for not hedging their exposures. Some of the shareholders of Compaq Computer, for example, are suing the company for not hedging its foreign currency exposures sufficiently. Last year, shareholders of an Indiana grain cooperative successfully sued four directors for not fully hedging against a fall in grain prices.

The other side of the coin

Before you draw a one-sided conclusion, however, note that derivatives can also be a directors's dream. The derivatives market provides an extremely useful tool for corporations. Few dispute the critical role derivatives and financial engineering play in the capital markets. Many corporations have very effectively used swaps and other derivatives to reduce their cost of debt and to hedge their interest rate and currency exposures. A survey of 80 large end-users conducted by the G30 indicated the following:

- 42 % find derivatives to be an "imperative" tool:
- 40 % find them to be a "very important tool";
- 19 % find them to be "important" and
- None found them to be "not very important" or "of little value."

And, subsequent to Breeden's stern warning in the March 7th op-ed, he observed to Congress on May 10th: "Some descriptions of the market seem to imply that all derivative transactions are highly speculative or risky, when in fact some are and some are not. Whatever else is true – and there are real issues that should be addressed – the sky is not falling."

So where did P&G, Mead, Gibson Greetings, Dell, and Metallgesellschaft go wrong and how can you avoid making the same mistakes?

Many corporations do not have sophisticated enough tools to manage properly the risks inherent in their use of complex instruments. Capital Market Risk Advisors completed a study last year for a client of the credit risk management practices of some of the largest and most sophisticated end users of swaps and derivatives and found that only five percent were setting credit limits on other than a simplistic notional principal basis.

Many corporations lack the systems to keep track of their derivatives positions; mark them to market or, as I prefer to call it to reinforce constantly the subjectivity of the calculation, "mark to model" (important for exposure monitoring even if us-

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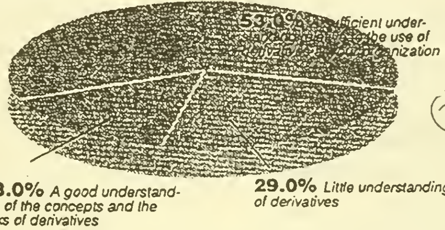
ing hedge accounting). In addition, many cannot establish, measure and monitor credit exposures by individual counter-party and by counterparty groups (i.e. credit rating class; country etc.); or to stress-test their portfolios to understand how they would perform under adverse conditions.

"What depth of understanding of derivative products and associated risks is possessed by your board of directors?"



Source: G30 Survey of Market Practice

What can you, as a director do? You can ensure that:

- You and your fellow board members plus senior management are knowledgeable regarding derivatives and risk management;
- There are appropriate written policies in place for the use of derivatives and that these policies are reviewed and updated as needed;
- There is a strong Independent Risk Oversight function with real authority;
- There is adequate stress-testing and simulation capabilities where necessary to analyze how the derivatives portfolio will behave under adverse conditions;
- Management understands what small moves in underlying (interest rate, currency, equity or commodity market) might cause great pain.
- Accounting policies reflect appropriate reserves for credit, liquidity, close-out costs, and administration;
- Positions are marked to market regularly and that to the degree that you are relying on subjective assumptions and non-standard models and are really marking to model versus marking to market, that the sensitivity of your valuation to your assumptions and to your model are well understood and dimensioned;
- Actions exist for violations, not just reports;
- Any speculative activity is manageable relative to capital and approved by the board;
- Funds cost is being calculated on a risk adjusted basis;
- You are not wholly dependent on one dealer for ongoing valuation of your hedges or speculative positions;
- You have made a G-30 assessment and have a formal mechanism to stay in touch with current best practices in risk management.

Conclusion

Simple tools are no longer up to the task of measuring risks. Every corporation that participates in the capital markets or executes derivatives privately with a dealer needs to update policies and limits to today's world. This is especially true for corporations that have prudent person policies. (The definition of prudent may be in the eyes of the beholder, so it's best to review the definition in your corporation.)

For those corporations that may be tempted to implement safety through policies such as "if it's not listed here, you can't do the transaction," we observed that this may introduce a different risk in the form of competitive disadvantage or in using older, less efficient hedging or fund raising tools.

One thing is certain: without proactively reviewing current policies, and implementing the next generation of risk management in your company, you have a much higher likelihood of waking -- only to enter a nightmare.

Leslie Rahl is a Principal of Capital Market Risk Advisors, Inc., a consulting firm in New York City specializing in swaps, options and derivative products. She was the founder of the interest rate cap, collar and floor business.

She has managed all facets of this business including trading, risk management, financial engineering, origination, research, documentation and legal. For nine years, Ms. Rahl led the Citibank swaps and derivatives team of 45 traders, 30 originators/financial engineers and 10 researchers.

Her team, rated #1 by both Euromoney and Greenwich, originated an average of 1000 deals annually totaling in excess of $50 billion. Ms. Rahl's trading experience includes responsibility for market making, hedging and proprietary trading for books in excess of $100 billion.

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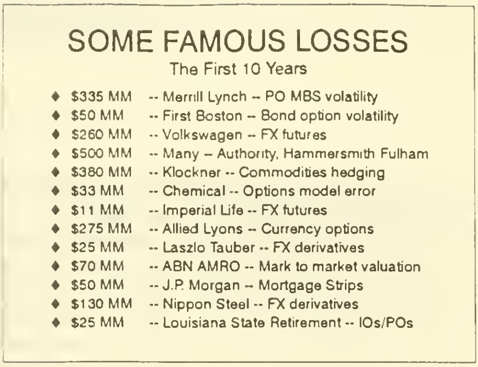
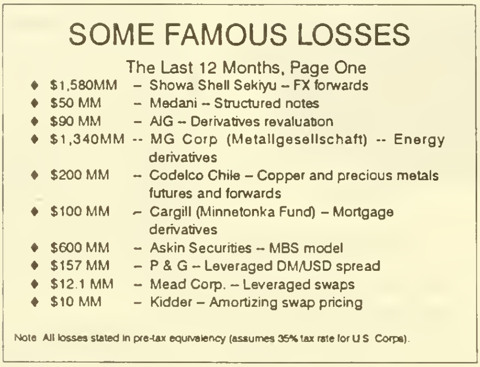


SOME FAMOUS LOSSES

The First 10 Years

- $335 MM -- Merrill Lynch -- PO MBS volatility
- $50 MM -- First Boston -- Bond option volatility
- $260 MM -- Volkswagen -- FX futures
- $500 MM -- Many -- Authority, Hammersmith Fulham
- $380 MM -- Klockner -- Commodities hedging
- $33 MM -- Chemical -- Options model error
- $11 MM -- Imperial Life -- FX futures
- $275 MM -- Allied Lyons -- Currency options
- $25 MM -- Laszlo Tauber -- FX derivatives
- $70 MM -- ABN AMRO -- Mark to market valuation
- $50 MM -- J.P. Morgan -- Mortgage Strips
- $130 MM -- Nippon Steel -- FX derivatives
- $25 MM -- Louisiana State Retirement -- IOs/POs

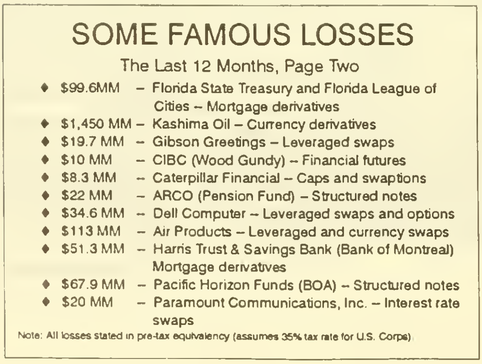


SOME FAMOUS LOSSES

The Last 12 Months, Page One

- $1,580MM – Showa Shell Sekiyu – FX forwards
- $50 MM – Medani – Structured notes
- $90 MM – AIG – Derivatives revaluation
- $1,340MM -- MG Corp (Metallgesellschaft) -- Energy derivatives
- $200 MM – Codelco Chile – Copper and precious metals futures and forwards
- $100 MM – Cargill (Minnetonka Fund) – Mortgage derivatives
- $600 MM – Askin Securities – MBS model
- $157 MM – P & G – Leveraged DM/USD spread
- $12.1 MM – Mead Corp. – Leveraged swaps
- $10 MM – Kidder – Amortizing swap pricing

Note All losses stated in pre-tax equivalency (assumes 35% tax rate for U.S. Corps).



SOME FAMOUS LOSSES

The Last 12 Months, Page Two

- $99.6MM – Florida State Treasury and Florida League of Cities – Mortgage derivatives
- $1,450 MM – Kashima Oil – Currency derivatives
- $19.7 MM – Gibson Greetings – Leveraged swaps
- $10 MM – CIBC (Wood Gundy) – Financial futures
- $8.3 MM – Caterpillar Financial – Caps and swaptions
- $22 MM – ARCO (Pension Fund) – Structured notes
- $34.6 MM – Dell Computer – Leveraged swaps and options
- $113 MM – Air Products – Leveraged and currency swaps
- $51.3 MM – Harris Trust & Savings Bank (Bank of Montreal) Mortgage derivatives
- $67.9 MM – Pacific Horizon Funds (BOA) – Structured notes
- $20 MM – Paramount Communications, Inc. – Interest rate swaps

Note: All losses stated in pre-tax equivalency (assumes 35% tax rate for U.S. Corps).

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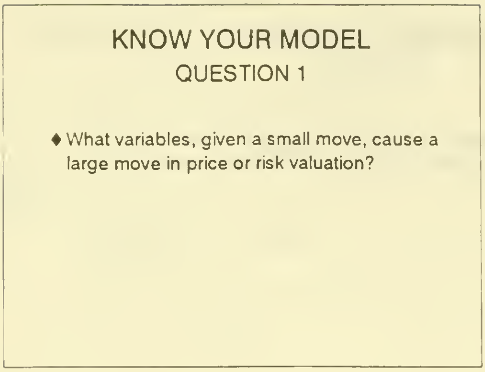
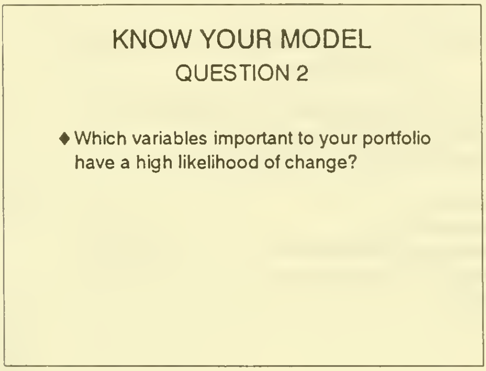


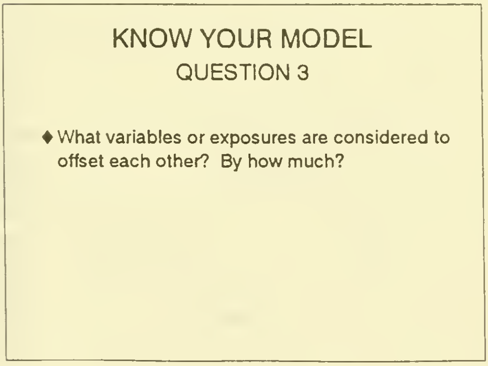
KNOW YOUR MODEL
QUESTION 1

- What variables, given a small move, cause a large move in price or risk valuation?



KNOW YOUR MODEL
QUESTION 2

- Which variables important to your portfolio have a high likelihood of change?



KNOW YOUR MODEL
QUESTION 3

- What variables or exposures are considered to offset each other? By how much?

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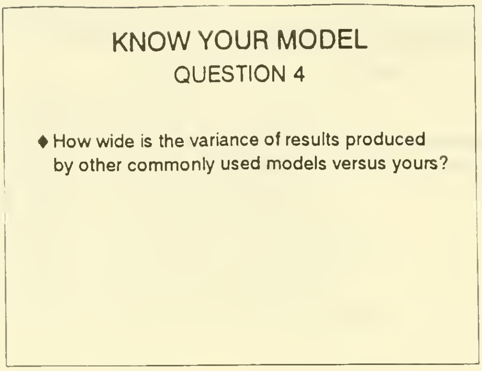
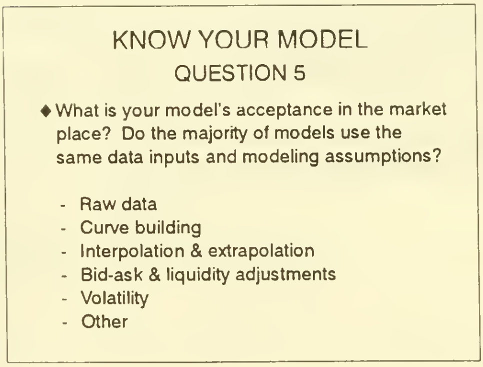


KNOW YOUR MODEL
QUESTION 4

- How wide is the variance of results produced by other commonly used models versus yours?



KNOW YOUR MODEL
QUESTION 5

- What is your model's acceptance in the market place? Do the majority of models use the same data inputs and modeling assumptions?
  - Raw data
  - Curve building
  - Interpolation & extrapolation
  - Bid-ask & liquidity adjustments
  - Volatility
  - Other

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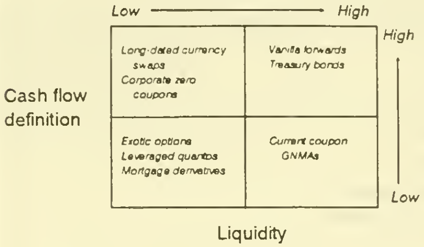
Primary Risk Dimensions

Examples

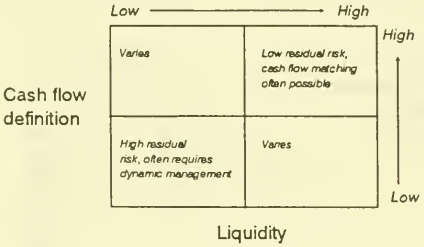


Cash flow definition

	Low	High
High	*Long-dated currency swaps* *Corporate zero coupons*	*Vanilla forwards* *Treasury bonds*
Low	*Exotic options* *Leveraged quantos* *Mortgage derivatives*	*Current coupon GNMAs*

Liquidity

Hedging Implications

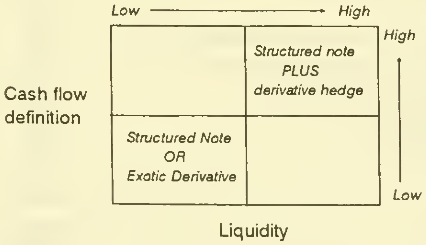


Cash flow definition

	Low	High
High	*Varies*	*Low residual risk, cash flow matching often possible*
Low	*High residual risk, often requires dynamic management*	*Varies*

Liquidity

Individual vs. Portfolio



Cash flow definition

	Low	High
High		*Structured note PLUS derivative hedge*
Low	*Structured Note OR Exotic Derivative*	

Liquidity

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COMMON PROBLEMS

- Marking to "model" vs. to "market"
  - Data integrity
  - Time lag
  - Curve creation
  - Interpolation
  - Extrapolation
  - Confidence intervals
  - Other key assumptions

HOW MANY RESERVES?

Common Types

- Credit
- Market
- Administrative
- Settlement
- Liquidity

Our Strong Recommendation

MODEL RESERVES

- The majority of risk comes from few derivatives
- Determine the variance of results, both within and outside of target confidence intervals
- Analyze the standard deviation of the differential across models
- Reserve accordingly

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STRESS TESTING

- Sensitivity to yield curve level and shape
- Sensitivity to Swap Spreads
- Sensitivity to Basis Risk
- Sensitivity to FX Risk
- Sensitivity to yield curve creation methodology
- Sensitivity to model

Causes of Negative P/L variance

Derivative Results vs. Expectations

- Market discontinuity [88%]
- Illiquidity [84%]
- Inexperienced trader [84%]
- Input error in model [68%]
- Trader exceeded limits [61%]
- Model error - algorithms [61%]
- Model error - programming [61%]
- Systems failure [58%]

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Mr. MARKEY. And our final opening witness—and we will hear from him for his 5 minutes, and then we will break for a roll call. Continuing in our conspiratorial Lamont Cranston line of thinking here today, which asserts that it takes a rocket scientist to understand these technologies, we thought we would invite, unbelievably, Camilo Gomez, who is currently leading the research effort in financial derivatives at Los Alamos National Laboratory.

Prior to joining Los Alamos, he was the Vice President of Equity Derivatives at Lehman Brothers. Dr. Gomez has earned multiple degrees from MIT.

We welcome you.

At this time let me yield to the gentleman from New Mexico, Mr. Richardson.

Mr. RICHARDSON. Thank you, Mr. Chairman.

I appreciate you granting me this courtesy to introduce my constituent.

Mr. Chairman, Dr. Gomez is a very distinguished member of my congressional district. He has been at Los Alamos for the last 6 years. And during that time, he took a leave of absence to serve as a Vice President of Lehman Brothers where he was heavily involved in the computer modeling of complex trading activities which are the subject of today's hearing.

Mr. Chairman, you have already said some very nice things about Los Alamos, and I would just hope that this will be another one of the spin-offs that Los Alamos can undertake as it moves away from being a defense laboratory and it moves into transfer of technologies, moves into energy, biotechnology. And I think you know that at Los Alamos we have one of the finest computer models, the Cray computer, and I think in this area of derivatives Dr. Gomez, I am sure, can talk about the unique contributions that can be made by Los Alamos and by him here.

So I commend you for holding this hearing. I thank you for the courtesy again, as always, and I apologize for my brief stay.

Mr. MARKEY. I am sure that Enrico Fermi is proud that you are here today taking his theories into areas that would have never been anticipated.

We welcome you, Dr. Gomez. Whenever you are ready, please begin.

STATEMENT OF CAMILO C. GOMEZ

Mr. GOMEZ. Mr. Chairman and members of the subcommittee, I am pleased to appear before you today to discuss financial derivatives. The explosive growth of OTC instruments in the last few years has highlighted their associated risks. Regulators are now faced with the task of deciding whether or not to increase oversight of this market, and if so, how.

Because OTC instruments do not have a clearinghouse acting as an intermediary, the problem of default risk becomes an important consideration. Unlike exchange-traded instruments whose value can be estimated by bid or ask price, valuation of OTC derivatives must be determined from computational models.

In the case of more complex instruments, the models may require assumptions that are sometimes untested. In other cases, participants may simply misapply a pricing model.

There are two types of risks associated with these instruments: one is specific risk, and the other is systemic. The first is the risk of a counterparty defaulting on a contractual agreement because of its particular financial condition. The second is the risk of a local financial distress propagating to other parts of the system. Losses are natural and constant part of the derivative market as it is a zero-sum game.

When these become of concern is when they are borne out of ignorance for the risks involved. The level of understanding these dangers by market participants varies greatly, from the larger players, which have the domain knowledge and the required quantitative resources to handle derivative instruments, to the larger number of end-users which, in many cases, are new to the field and lack the knowledge and resources to decide on the proper choice of instrument to meet their goals and how to handle their associated risks.

Market participants must put in place risk-management systems and procedures to determine their potential loss and their ability to handle it. Stress testing a portfolio should be an integral part of this, providing a means for identifying sources of risk and possible maximum levels of loss.

The U.S. Government, through its historical willingness to support the financial system, effectively underwrites the derivatives market. As such, it has a responsibility to provide solutions that will encourage the orderly development of these markets.

The lack of uniformity in the markets and their heavily quantitative nature suggests that in addition to regulation, the government should undertake an effort to develop a standardized framework of principles for valuation and risk management of derivatives and make it available to all participants.

The development of a standardized methodology would give regulators a uniform benchmark by which to compare the risk exposures of various participants, and would help define reporting and capital requirements. It would give participants a reliable means by which they can determine the pricing and risk of a particular transaction.

Research in the area of market simulation should be undertaken. By use of high-performance computational platforms, aspects of market behavior may be simulated. The effort would provide a tool that can help define the limits of model validity. It would also help in the stress-testing by identifying market stress scenarios and their likelihood.

It may aid regulators in identifying the effects of proposed rules such as helping to set adequate capital standards.

In summary, the government should undertake research to develop a set of standards for valuing and handling derivatives. This effort would take two forms, the development of a suite of benchmark models and principles for valuing and managing derivative instruments, and to perform research in market simulation.

These efforts would give regulators the tools to help in developing monitoring systems and set capital standards. By making the results of this effort widely available, the government would give market players reliable tools to manage their derivative positions and help shorten the learning curve for new entrants.

The net effect of this would be to raise the level of the quality in the markets and contribute to a reduction of systemic risk.

Thank you.

[Testimony resumes on p. 91.]

[The prepared statement of Mr. Gomez follows:]

Statement of
Dr. Camilo C. Gomez
Senior Staff Member
Los Alamos National Laboratory

before the

Subcommittee on Telecommunications and Finance
Committee on Energy and Commerce
U.S. House of Representatives

July 13, 1994

Mr. Chairman and Members of the Subcommittee, I am pleased to appear before you today to discuss financial derivatives.

While I am currently a Senior Staff Member at Los Alamos National Laboratory, I spent several years at Lehman Bros. as a Vice-President in Equity Derivatives. During my time there, I was heavily involved in the modeling and trading activities that are of concern to this Subcommittee today.

Introduction

According to the May, 1994 GAO report, the derivatives market has experienced explosive growth, with its overall value having grown by more than 145% in the last four years.[1] Recently, severe financial losses by end-users of OTC derivatives have also brought increased attention to the need to reduce potential sources of instability and risk wherever possible.[2] As a result, regulators are now faced with the task of deciding whether they should increase oversight of derivative activities and if so, how best to do it. Some observers point out that increased oversight would jeopardize the flexible nature of the market, critical to its operation. Still others fear that further regulation and standardization will only serve to drive business overseas. However, the majority consensus is that some action must be taken to shore up the stability of the U.S. financial system.

Derivatives comprise a class of securities that derives its value from another underlying set of assets. While derivative securities in the form of future and forward contracts have existed for a very long time, the complexity and richness of present derivatives far exceed that of early contracts. Several events have taken place that have contributed to the synergistic growth of the derivatives market. The first was the development of a theory for the valuation of these securities. Financial models have allowed the creation of securities with an almost arbitrary cash flow. This ability has pushed the development of more complex derivatives, and thus of the market itself. This expansion has in turn pushed the development of the theory even further. Moreover, the introduction of low-cost, high-performance computing platforms has allowed relatively widespread implementation of these mathematical models. In addition, the growing number of institutional investors involved in the derivatives market has also contributed to the growth of OTC derivatives, as these investors have the necessary capital to trade in these instruments. Finally, the globalization of markets has increased the demand for derivative instruments, which are increasingly attractive as they allow flexible management of investments in multiple currencies.

Reducing Systemic Risk through Benchmark Models

Through the use of derivatives, an individual or corporate entity can precisely tailor its risk profile. The highly leveraged nature of these instruments has also given rise to their use as investment vehicles. It is their growth in this latter category that is the subject of current debate over whether they increase the systemic risk of the market or not. The possibility of increased risk is due to the coupling between the derivative market and that of the underlying assets through active hedging. This activity may enhance the volatility of the underlying security. Evidence that supports this view can often be seen in an increase in the short-term volatility in the listed markets near the expiration days of index futures and options. In addition, the high leverage and multiple contract holdings by participants may increase the likelihood of default, increasing the risk to the overall financial system. Second, the global nature of these instruments introduces political risk exposure. In these cases, unilateral action by a sovereign state can disrupt the integrity of a cross-border structured product or option, causing a position to become unhedged.

The largest derivatives market participants have the resources and expertise to develop in-house pricing and risk management systems. New entrants and lower-tier participants lack the resources to develop these systems and often must rely on commercial software products of unknown quality to make their decisions. This lack of access to quality models is another source of risk that must be reduced if a more stable system is to be created.

The May, 1994 GAO report urged Congress to pass legislation that would increase the government's oversight on the activities of derivative-market participants. Federal Reserve Chairman Greenspan, among others, has also outlined the need for a more sophisticated approach for assessing such complex instruments.[3] Unlike exchange-traded instruments, whose value can be approximated by the last sale, the bid, or the ask price, the valuation of OTC derivatives must come from complex computational models, which depend sensitively on parameters determined from the underlying securities, such as volatility and correlation as in the case of multiple asset contracts. Many of these parameters are unobservable and must be inferred from the prices of the underlying securities and other information. Participants disagree over the way in which these models should be implemented and the input parameters determined. For this reason, it is necessary to create a set of benchmark models that capture the unbiased valuation of these instruments.

As Chairman Levitt noted in previous testimony to this Subcommittee,[4] the SEC has already taken steps in this direction with respect to listed options by issuing a proposal for comment on rule amendments that would set capital requirements for options through theoretical models.[5] OTC derivatives will be more difficult to evaluate as the contracts are more complex and the input parameters more difficult to determine. Developing a set of benchmark models would address some of these concerns and ultimately help in setting capital requirements.

The creation of a benchmark set of models would also help reduce the risk associated with the information gap between participants. These models would provide some of the tools and principles needed for players in the derivatives market to develop their own in-house risk management systems and to help "level the playing field" between the smaller and larger players.

If Congress decides to enact legislation that will cover the existing regulatory gaps or if a voluntary system emerges, a tested and widely available framework for valuing and managing these securities is needed. The theoretical framework exists for pricing derivatives. Such tools may be used to develop a set of elemental contracts that describe more complex instruments and that identify the different categories of market risk pertaining to them.

The Derivatives Markets

Derivatives exist across all market segments: equity, fixed-income and commodities. They take the form of future and forward contracts, options and swaps. Many times the final instrument is really a combination of elements from each of these groups.

Marking-to-market is the means by which the approximate value of a particular holding is determined. The importance of this activity in the management of derivative portfolios is discussed in the Group of 30 report.[6] For the case of listed instruments, this usually involves taking the last sale price as a benchmark or in the case of thinly traded instruments, the last bid, ask or mid-market price. As mentioned earlier, since off-balance sheet derivatives are not actively traded, their marking-to-market must be done through a theoretical model.

In the case of the more common derivatives, such as interest-rate swaps, the models seem to be fairly uniform, as evidenced by the closeness of the bids of various dealers. In the case of less commonly used derivatives this does not seem to be the case. As an example, consider compound options, whose underlying security is itself an option. There can be significant spread in bids and they are sometimes priced as if they were conventional options, providing arbitrage opportunities. What this implies a lack of uniformity in the implementation of valuation models. Market forces can not correct for this arbitrage easily. However, a well-tested set of benchmark models could help reduce this spread.

A fairly compact theoretical framework exists by which the rich zoology of derivatives can be understood. The problems to be dealt with here are complex and difficult, although many of the needed analytical methods have been developed in theoretical finance. Other research tools exist in fields outside of finance which can readily be applied, such as in communications, applied mathematics, and chemistry.

A distinction should be made between structured products and elemental derivatives. Structured products are those that truly represent a combination of simpler securities. Swaps, which play an important role in derivatives, are an example of this type of instrument. For these, the valuation and risk may be understood in terms of the simpler instruments underlying them. Elemental derivatives on the other hand are those instruments that cannot be reduced into simpler units -- such as calls, puts, and exotic options.

Risk Management Issues

Risk management of the derivatives market should take place at various levels:

- Oversight by Federal agency;
- Corporate management; and,
- Portfolio management.

At the oversight level, the Federal agencies could play a positive role in interpreting the various position reports from market participants. To do so, there must be some standardization in the reporting of positions by market participants. Benchmark models would aid in the identification of risk factors at the instrument and portfolio level, which could then be incorporated into the standardized reporting requirements.

The firms must manage their risk on positions already taken as well as in deciding on future positions. At this level, risk management must take a portfolio-wide approach. In many cases there may be offsetting positions that act to reduce the overall risk of the portfolio. By segmenting the firm's position into a set of elemental contracts, the risk may be better assessed. To avert undue potential risk the company must also perform pre-emptive risk management by closely monitoring both trader activity and the nature of new contracts being considered. Larger trading houses have many traders taking positions, often times independently of each other. These positions must be coordinated in order to optimize the modifications to the firm's portfolio in a dynamic fashion.

Risk management of a portfolio should consider factors such as:

- future market conditions;
- future economic conditions;
- credit risk;
- correlation amongst the various securities; and,
- industry-sector exposure.

The managing of cross-border derivatives should include such factors as:

- political risk;

- foreign-exchange risk; and,
- correlations between foreign markets.

A standard set of models would produce critical information vital for accurate risk assessment.

Research in the area of market simulation should be undertaken. Computational technology has advanced to the point that this becomes a meaningful endeavor in financial markets.[7] Such research could have a significant impact on the derivatives market -- not only in assessing the effects of proposed regulations, but in portfolio "stress testing" as well.

Capital requirements are currently being considered as a means of reducing default risk. The use of market simulations would allow regulators to determine if the proposed levels are appropriate for this task.

Stress testing of market portfolios involves the study of its behavior during periods of market stress. Currently, this is commonly done by studying historical events of market stress. Market simulations may allow testing of portfolios in as yet unrealized states of market stress

Conclusions

As greater attention is now focused on risk in the derivatives markets, one of the hoped-for results would be the initiation of a focused effort to understand the behavior of derivatives through advanced modeling techniques. The U.S. Government should undertake to develop systems to improve the understanding of derivative market risk.

If a leading derivatives dealer decided to make available to the public all of its proprietary systems and software, the major effect would be to increase the overall quality of the derivatives market. Likewise, if the Federal government sponsored the creation of benchmark models, this would have a similar positive effect.

This research should take two forms: the development of a framework for pricing derivative instruments, and a focus on research in market simulation. The results of these efforts would give regulators the necessary tools to develop monitoring systems and set capital requirements. Through the wide-spread dissemination of this technology, the quality of modeling in the derivatives market would then not only be vastly improved, but it would also give smaller players better tools to price and understand their risk. Wide availability of inexpensive and powerful computing platforms makes it possible for all participants in this highly quantitative market to utilize these models.

To provide sophisticated and accurate models of the derivatives market, the Congress and the Executive branch might well consider that a national laboratory, such as Los Alamos, could play an important intermediate role -- between academic and corporate research -- that would help expedite the development of emerging technologies in this financial arena.

Since its inception, Los Alamos has been at the forefront in applying computational techniques to important national problems. Large-scale computing originated at Los Alamos, and it continues to advance the state of the art in high-performance computing. The Laboratory's competence in this area was recognized when the Department of Energy named Los Alamos as one of two national High-Performance Computing Research Centers. Los Alamos is involved in all aspects of supercomputing: development of new technologies, development of software to bring those technologies to bear on civilian, national security, and commercial problems, and development of communications strategies to allow the information generated and processed by these technologies to be shared by users around the nation.

Improved models of the derivatives market could aid not only the U.S. financial industry, they could also help protect the U.S. economy.

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1. FINANCIAL DERIVATIVES--Actions Needed to Protect the Financial System--GAO/GGD-94-133.

2. P&G's Loss Shows Pitfalls in Getting into the Game of Options and Swaps-Wall Street Journal 4/14/94

3. Testimony by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System before the Subcommittee on Telecommunications and Finance of the Committee on Energy and Commerce, U.S. House of Representatives, May 25, 1994.

4. Testimony by Arthur Levitt, Chairman, US Securities and Exchange Commission before the Subcommittee on Telecommunications and Finance of the Committee on Energy and Commerce, US House of Representatives, May 25, 1994.

5. Securities Exchange Act Rel. No. 34-33761.

6. Derivatives: Practices and Principles, Appendix I: Working Paper of the Valuation and Market Risk Management Subcommittee.

7. Grannan, E. R. and G. H. Swindle, "Contrarian and volatility clustering", Santa Fe Institute Working Paper 94-03-010.

Mr. RICHARDSON [presiding]. The Chair will recognize itself, as Chairman Markey will be back shortly.

I want to mention to members that we have, I think, about 7 minutes before the journal vote is completed.

Dr. Gomez, the debacle of the Askin Capital Management Granite Fund, is this a case where it could happen to one of the major dealers? Did, in effect, this whole debacle become too complex, the strategy, the market-neutral strategy?

Is it a case where it became too complex for those that designed it? What do you think happened there?

Mr. GOMEZ. Well, there are severe limitations to some of the models that are implemented, and there are cases when the market can take moves which are not accounted for.

Mr. RICHARDSON. But could it happen to—could one of the major dealers be susceptible to this?

Mr. GOMEZ. No, the major dealers I believe have their risks well under control. Where the concerns come in is for the smaller participants who lack the resources to develop in-house models.

Mr. RICHARDSON. Ms. Beder, some have suggested that in the aftermath of these, of this debacle that I just mentioned, that there is a new focus on counterparty risk and the potential for sudden losses in liquidity in derivative financial instruments.

Do you—do you agree? And if you do, what are some of the firms doing to respond to some of these concerns?

Ms. BEDER. Yes, I agree there is a new focus. The focus primarily is to preclude what many believe was the downfall of Askin, which was actually believing their model despite the fact that the market's figures were—prices were different. Clearly, one has to have controls in place such that if a trader is employing a model and deciding that their model is more right than the market, that steps are taken to be sure that the degree of capital risk is controlled, in my opinion, both dealers and end-users have been working very hard to accomplish that over the last 12 to 15 months.

Mr. RICHARDSON. Mr. Vinella, given the uncertainties and assumptions surrounding marking to a model, how reliable are the values derived from such a process?

Mr. VINELLA. Well, in some cases, it is the only chance you have of coming up with a price. As the issues become more specific to an individual investor's needs, they become less traded on the secondary market, therefore, mathematical models are really the only hope of coming up with a good idea of where the security should be priced.

In the case of Askin the one point I think it is important to realize is that he was forced to accept the Street's price, for instance, because of the highly leveraged position that he was in. His theoretical model said it was worth something.

The Street, on the other hand, said it was worth something different. If it hadn't been a funding issue, he probably could have stayed with his theoretical price until the markets corrected themselves. So there is always a difference between what a theoretical price is and what the market is willing to pay for it.

Mr. RICHARDSON. What about the public investor, how should the public investor regard the mark-to-market prices process? Is there exposure there?

Mr. VINELLA. There is definitely an exposure. One of the things about price, is it is a vague term. If you have ever owned a secondhand car, that is an illiquid instrument, and it is the same thing, you may think it is worth $15,000, if you if you have to sell it, you may have to take 10,000 for it. So as you start looking at price, it is very subjective to not only the value of the security itself, but also the willingness of the buyers and the sellers to perform the transaction.

Marking on a daily basis should be viewed as giving you an indication of where the security is, where the security's value is, but it doesn't necessarily say that is what you could do right at the moment. I think individual investors have to realize, just as with a secondhand car, that a security that is very illiquid is going to be subjected to large swings in price.

Mr. RICHARDSON. I am trying to sell my Jeep secondhand to Mr. Bereuter who is not a member of this committee. I will take that to heart.

Dr. Gomez, do you have any thoughts on the role of the public investor as the public investor looks at these mark-to-market prices?

Mr. GOMEZ. Well, the public investor needs to be provided with instruments or better education on how these instruments are derived. OTC instruments have come about because of developments in financial theory that have allowed the separation of various cash flows and their ability to tailor them to a particular instrument. The average education of the public investor really is not at the level for fully appreciating these risks.

Mr. RICHARDSON. Ms. Beder, what do you think of Dr. Gomez' benchmark, developing those models to assess risk, facilitate through stress-testing? In other words, in Los Alamos, there are about 6,000 Ph.D's in the whole town of about 10,000 people.

It is a county that is so smart, in my congressional district, it is the only one that doesn't vote for me. And my point is, please feel free to criticize his proposal. I mean, in a constructive way.

Ms. BEDER. I was going to ask you what conclusion we should draw from that. In our review of hundreds of transactions and dozens of portfolios, our experience is that the critical risk factors vary significantly from portfolio to portfolio. And, in fact, when you pose two crucial questions, which are what variables given a small move cause a large move in price or risk valuation, also followed by the question, which variables important to your position or your portfolio have a high likelihood of change, that the answers vary significantly.

So the creation of an individual benchmark may serve to actually mask the risk of the portfolio, because to the degree that you are measuring on a standard which does not apply to the risks in a particular portfolio, you can be misled that you in fact have no risk when the risk may be very significant.

So I think that this means of course you must have a measure, but we believe that measure should be driven by the amount of capital that is at risk in an institution. And as long as the amount of capital that is at risk is within the amount that an institution can afford to have potentially at risk, then benchmarks should be designed to protect that, and those will vary.

Mr. RICHARDSON. Speaking of risk, I am going to have to excuse myself. I am in severe risk of missing this vote.

So—is Mr. Bryant back?

The gentleman from Texas arrives just in time to chair the hearing and allow me to make this vote. I was just concluding my questions to this panel.

Mr. BRYANT [presiding]. Well, pardon our awkward circumstance here. We appreciate your patience.

I wanted to ask, I wish I could have heard the conclusion of your testimony, I was running over to vote in hopes of getting back so we wouldn't have to adjourn the hearing.

A couple of philosophical questions about these—I guess you could still call them "new investment devices." I understand and I know, Ms. Beder, that you stated in your testimony that you were sort of present at the creation of all of this, and I assume, and correct me or supplement what I say, that they were created in order to find additional ways to lay off the risk of the overall investment strategy of whoever the investor is. Is that correct?

Ms. BEDER. That was certainly an initial motivation. Another motivation was to obtain better financing costs or to achieve higher returns. And, in fact, many of the early transactions were driven by the differentials that exist structurally across markets on a global basis.

Mr. BRYANT. Well, I guess what I am curious about is what are the limits, the limits of that objective?

I mean, basically people originally invested because they thought they could figure out what people, consumers, were going to buy, what service or what products they are going to ultimately buy, therefore what companies would be a good bet on which to place your money.

Now, we are at this level of figuring out what two or three levels of reacting forces are going to do. I just wonder what the outside limit of this is. What will be the next thing invented?

Ms. BEDER. I am sorry, the next?

Mr. BRYANT. The next device invented to achieve those same goals.

Ms. BEDER. Well, I mean whether it is a derivative or a new financial security or a new product, I think the important thing to keep in mind is that all financial instruments display similar risks and that derivatives' risks are actually identical to many of the risks that exist in many other securities and in many other business decisions that one makes.

In terms of whether or not an individual shareholder has more risk because an end-user invests in derivatives or utilizes derivatives, or whether, for example, a mutual fund holder has more risk or a pension fund holder, a pensioner, because their fund utilizes derivatives, has a great deal to do with the application of the derivative rather than the instrument itself.

I think that there are few examples of situations where the derivatives themselves have caused problems. In most cases it tends to be someone believing their own model, which can be corrected through better management oversight.

Many of the model risks that exist in the marketplace can actually be managed through stress-testing the assumptions underneath the models. And as we are seeing a move towards that both by end-users and corporations, I suspect that disclosure will improve significantly in terms of just the information provided both to individuals, to dealers and to end-users, regulators, accounting agencies, rating firms in the market in general.

Mr. BRYANT. Mr. Vinella, would you like to comment?

Mr. VINELLA. Well, as far as your question of what is the next object that is going to come out of Wall Street, for instance, I think it is important to look at the 1980's. And although a lot of people looked at the 1980's as an excessive period in time, actually it was a very creative time where firms could generate funding in lots of different vehicles.

The high-yield market, which got a very bad name and turned out to be called "junk bonds," until recently was one of the best performing markets. It provided funding to firms that normally could not go out and issue debt through the normal means.

Derivatives were also a way of raising capital for a lot of firms who needed to have it fine-tuned. If you take a loan out, for instance, at a certain rate, and you don't use all that capital, you in a sense are spending money that you don't really need.

Also, if you don't have your cash flows exactly matched where you are behind a little bit, you might have to get some bridge financing. So we come up with a derivative instrument that meet your financing needs exactly.

So it matched your liabilities. It is actually a very good thing. If you also look at the CMO market, which is actually a derivative market, that provided a great deal of liquidity to banks who had a loss, as on their books in terms of loans, but didn't have the ability to support their depositors in terms of those assets.

So liquidity is actually one of the biggest driving forces in the derivatives markets, as well as providing the correct financing. I just think that the proper way of looking at a derivative instrument is not some newfangled way of hoodwinking the general public, it is really a way of fine-tuning the investment criterion for the users.

Mr. BRYANT. Mr. Gomez.

Mr. GOMEZ. Well, I don't have a crystal ball to determine what the next instrument will be, but I would like the opportunity to respond to Ms. Beder's comments on the benchmark proposal or comments that we have made.

First of all, while it is true that every portfolio is different and the risks associated with them will be different, financial theory tells us that you can reduce them to a fairly compact set of issues that can be addressed.

The reality of current financial modeling in Wall Street is it is basically an ad hoc patchwork of assumptions, driven by the particular participants and individual firms. There are a number of issues that need to be addressed which each firm addresses differently, such as the assumed parameters that go into it such as volatility, correlations between the various assets, and in particular how they model credit risk of a counterparty.

Obviously, different counterparties will require different modeling techniques, whether the counterparty is a large firm, an individual or such. The focus of the idea of developing a set of benchmark models is not to develop a single benchmark, but to codify the methodologies, the framework, for a more general analysis technique.

Thank you.

Mr. BRYANT. I have no further questions.

Mr. MARKEY. The gentleman's time has expired.

The Chair will recognize himself.

Mr. Vinella, a recent article in the Wall Street Journal reported that the New York Fed has initiated a study of the effect of the mortgage-backed securities market on Treasury bond prices in light of the larger than expected rise in Treasury note and bond interest rates. Some have attributed that change to the Askin-Granite losses, which drained liquidity from the mortgage-backed market.

If the collapse of a singlehedge-fund pursuing a derivatives-based trading strategy in mortgage-backed securities can adversely affect interest rates on benchmark Treasury securities, what impact would a derivatives-related failure of a large bank or a securities dealer have on the markets?

Mr. VINELLA. Well, first, I don't necessarily agree that it was David Askin's failure or his firm that caused the mortgage-backed market to react so negatively. I think it was the interest rate effects on mortgage-backs which are very similar to the interest rate effects on the Treasury securities market, although there is a lot of truth in the fact that the Treasury market did react very adversely as a market because people were using that as hedge vehicles against mortgage-backs.

In terms of a failure of a large dealer, large dealers have failed on a fairly regular basis. If you look at that over time, every 10 years or so there is a major upheaval at some point. Drexel was probably the most recent of the large firms to go under. They controlled nearly a majority of the high-yield market. That market performed very well after their demise.

So I don't think there is a general risk of a major failure being caused by the failure of one or two institutions. A large bank would be something different than a dealer. Dealers in general are not that largely capitalized. They have $3 billion to $5 billion in capitalization.

Banks are significantly larger institutions. They also are publicly funded, in a sense, and they are also publicly insured through the government. I think those are much bigger issues.

Mr. MARKEY. So let's walk through what happens if a large bank fails.

Mr. VINELLA. If a large bank fails, and we have seen some of those happen actually in the 1980's also, there will be counterparties that won't receive the payments they expect to get on trades. The government would most likely insure the depositors, but the people who are doing securities transactions or derivatives transactions would pretty much be left out in the cold.

The largest players in the derivatives markets tend to be large banks, so that they are not necessarily a "house of cards" effect, but you would see some ripples, possibly large shock.

Mr. MARKEY. And is the potential there for a derivatives trading strategy to result in that for a bank, if they weren't careful?

Mr. VINELLA. I don't think one strategy will fail. I think with David Askin, it is important to realize, he was a fund that was not diversified at all. I mean, he was playing one specific strategy. He happened to have $600 million, but it was one specific strategy that failed.

One of the things that came out of the whole portfolio theory was the idea of diversification. The more diverse you are, the less likely you are to have a single strategy causing a failure.

Banks are in the real estate markets, there have been a lot of large losses in real estate, but they are still as liquid as banks. I don't think that a failure in one strategy in a specific subsidiary of a bank would cause the bank to fail specifically.

Mr. MARKEY. Well, we have seen the Bank of New England, we have seen all kinds of banks that diversified by having a whole set of condos on Long Island to hedge against the condos on Cape Cod, so you were really spread out in terms of the real estate towers in New York and Boston. You know, in case one went under, the other wouldn't.

I guess a part of this is, what is a diversified strategy? And what if you are in the hands of someone who is absolutely confident as a financial genius that this is the market that is going up, guaranteed, you know, quadruple the rate of inflation or whatever, 30 percent a year for the rest of eternity. When you get that kind of mentality, which personally you must see in a lot of these people, they sit around after work and they start plotting their strategies with their summa cum laude-800 math boards, you know what I mean, and they have got it down to an absolutely infallible, and you know these guys, right?

They are almost all guys. You are like an exception in this business.

It wasn't easy to find you, they are almost all guys, Ms. Beder; are they not?

Ms. BEDER. They are, there are actually quite a few senior women in the business.

Mr. MARKEY. There are?

Ms. BEDER. Yes. But I would like to respond, I think the important thing is that if you are management, that if you have an individual or a portfolio manager or a trader who thinks, number one, they are smarter than the market or that they should not be diversified and they should be able to leverage their positions and use their own models, that there is a very important question that all managers must ask, which is what if I am wrong?

What if the trader is wrong? And that, in fact, is what stress testing is all about and why it is employed as a very valuable tool in the marketplace.

Mr. MARKEY. So would you have any problem with us having some requirement that these institutions have to perform stress tests? That there be a requirement they have to perform them?

Ms. BEDER. I believe stress tests should be performed.

Mr. MARKEY. Should they be required? Just to ensure against the stray genius that doesn't believe that his particular or her particular—because this is a disease which knows no gender barrier—model could fail.

Again, we don't care who goes bankrupt individually. Anyone who wants to roll the dice with their company or their personal fortune, that is their choice. We don't care, personally.

We do care if it has a ripple effect that goes throughout the system and affects other people. You know, if their money is at risk, that is where the government comes in, when you are no longer committing financial suicide, but it begins to affect the rest of the system as well.

And what do you think our responsibilities are towards those other institutions and other individuals who are affected by the lack of a stress test having been performed upon something that clearly would have ripple effects if it did collapse?

Ms. BEDER. My answer is that stress testing is a vital component of not only derivatives activity, but of all financial securities activity in general. I believe it is prudent.

Should managers be required to perform stress testing? Yes, absolutely.

Mr. MARKEY. It should be required?

Ms. BEDER. However, let me qualify just to say that when you ask what will you—what will you stress test, again, what each individual has to stress test depends upon what is—what exists in their individual portfolios. So one could say, well, stress test a movement in interest rates, and the problem is if their exposure is currency based, then the stress tests may say that they have no exposure, when, in fact, they have a lot of exposure.

So again it is quite important that stress testing be designed——

Mr. MARKEY. So it is a flaw in the stress test that would be the problem, but we are assuming that an independent party will do the stress test on the theory of the individual, not the individual himself. So we are assuming that, one, Mr. Vinella will do the stress test on you and you will do it on Dr. Gomez over here, and you will all come in with an arched eyebrow. We are assuming that these variables will be factored into any test which is applied.

Ms. BEDER. If I could, Chairman Markey, just ask a clarification; are you advocating that a single type of stress test be——

Mr. MARKEY. No, an appropriate stress test for each one of the algorithms which is developed, so that these variables are tested adequately by a party independent of the genius who constructed the original algorithm.

Ms. BEDER. Yes, that is consistent with the G-30 recommendations and with the recommendations of the GAO report and virtually every report that has been done by people who have looked into the business, including the dealers and end-users themselves.

Mr. MARKEY. And you would also agree that if any of these did collapse, that it could have an effect upon those other than the party which had been investing in the derivative? There is a real potential for that?

Ms. BEDER. Well, I mean, again, it is specific to a situation. Certainly, there were people in Askin who lost money. I think there are, you know, shareholders. If a corporation, although we haven't had a case of that, were to go under, certainly shareholders would be harmed, whether it is due to a bad bet on building a plant in the wrong country or a miscalculation on widgets or on imprudent use of any financial tool.

Mr. MARKEY. OK. Mr. Vinella, let me ask you this; should dealers be encouraged to provide their customers with the results of stress tests of the products that they are selling to them or other disclosures regarding the performance of the products under adverse market conditions?

Mr. VINELLA. I think one of the real problems for an end-user is that they don't have the resources to develop their own internal computer systems and mathematical models to really understand the limitations of the securities that they have bought. The dealers, on the other hand, many of the recommendations in GAO are what dealers are doing internally right now.

I mean, they do have internal audit capabilities, even the genius who thinks the market is going to go up still has to report to somebody in the risk management area. But the end-users themselves really are——

Mr. MARKEY. Well, he is 27, after all, and it has never been down.

Mr. VINELLA. That is one of the issues. But I do believe that dealers should be encouraged to perform some kind of scenario analysis for the OTC derivatives, especially if they are very fine-tuned to a specific end-user's needs. Because end-users don't have the facilities or resources to do that on their own.

One of the interesting things about having a national laboratory perform stress testing is that there aren't a lot of resources available, even on a time-sharing bases, for a small end-user. Even a company such as P&G, which is a large corporations, is not going to be able to afford dedicated systems to these types of securities. And having a facility, whether it is a public facility or a private corporation providing this as a business, it would—something should be encouraged.

Mr. MARKEY. So this is the Lamont Cranston question. Only the "Shadow" knows, if there isn't some requirement that the customer be given information with regard to what the consequences could be under certain, changed circumstances, so that it is not just almost a blind faith which is placed in the sales person's representations of how this product will perform.

Mr. VINELLA. I think one of the real problems with the derivative security is that a lot of times these commitments are very long term, 10-, 20-year type of commitments. And you have to forecast the general economies of not just the United States, but of the entire international community 20 years hence.

And there are not too many people, no matter how bright they are at 27 and they are sitting down in the market, that would understand where the markets are going to be. And I think at the time of the contract's conception, being able to simulate these in a computer and look at interest rate movements and look at currency movements would be very helpful, especially for the end-users again.

Mr. MARKEY. So you would support disclosure of stress test results as well?

Mr. VINELLA. Yes.

Mr. MARKEY. Would you as well, Dr. Gomez?

Mr. GOMEZ. Yes, I think that would be an essential component, as Mr. Vinella pointed out, and end-users really don't have the facilities for doing that. In addition, though, the public establishment of a framework for stress testing would be of great use.

The implementation of our high-performance computing capabilities would be useful, for example, as in modeling possible economic conditions further into the future, and identifying those possibly as yet unrealized states of stress that can happen in an economic system.

Mr. MARKEY. And would you agree that that information should be made available to the end-user as well?

Ms. BEDER. Yes, but I think you have to be careful in terms of stress testing—it must be accompanied by the confidence that when a stress situation occurs, you have enough capital to cover that stress situation. And that is primarily what the motivation is of stress testing.

There are three primary types of stress testing that are used in the market, and actually they have evolved over time. The first is to just analyze what happens if there is a single change in the market, whether it is a stock market crash or whether it is a big swing in an interest rate or a move in the currency rates, for example, in the European currency crisis. A second type is to look at multiple scenarios, and the third is to conduct some type of Monte Carlo-based simulation, which is clearly the most preferable. Right now, about 15 to 20 percent of the dealer community utilizes Monte Carlo simulations. I believe that number will be significantly higher within the next 12 months.

Now, the difficulty I think you have to be careful of is——

Mr. MARKEY. Monte Carlo, did you say?

Ms. BEDER. Yes, it is a mathematical technique.

Mr. MARKEY. That is game theory, Monte Carlo would suggest that?

Ms. BEDER. Yes, it is not meant to construe any form of gambling.

Mr. GOMEZ. Although it has its basis in it.

Mr. MARKEY. Excuse me, Dr. Gomez?

Mr. GOMEZ. It has its basis in gambling.

Ms. BEDER. The name does.

I think the important thing to point out is one must be very careful not to freeze what is a current best risk practice as the standard going forward. Because one may not only inhibit the advancement of risk-management theory, but may also give people the ability to believe again that they have less risks than they truly have in their portfolios.

And an example I would give you is that if we go back 10 or 15 years ago, to the early time that these markets were starting, and we look at big, big markets that are very important to the United States, like the mortgage market, we had standards such as all mortgages have a 12-year average life, whether the mortgage actually had 2 years left on it or whether it was a brand-new 30-year mortgage, the classic best practice at that time was to look at a mortgage as having a 12-year life. Now, that is far from what is today's best practice.

And imagine if, while that was the best practice at the time, had that been implemented as the standard, this is what everybody must do and disclose, it surely would have inhibited many of the wonderful mortgage products that are available to the consumer today. And I think it is important not to have that happen in a market such as derivatives, which performs many valuable roles to both dealers and end-users.

Mr. MARKEY. Well, again, we have to assume that the stress tests or whatever will be constructed by experts as well, and that they will be factoring in a lot of the concerns that you express. Our primary objective in this little round of questioning here is to establish that the end-user does have some rights to additional information regarding best guesstimates of what the downside risks could be, so that they are not being sold a rosy scenario that reflects the genius perspective of how he or she has reduced the risk down to almost zero. There should be an additional check on that assumption so that the consumer—and the system, in a lot of ways—is not left holding the bag if something goes wrong.

Ms. BEDER. I agree, the consumer and the system should absolutely be protected.

I guess the question I would put back to the subcommittee as they look at this is, what the value would actually be of disclosing that? For example, 99 percent of the time we will be in good shape; 1 percent of the time if there is a problem, we could have a problem. And I think again that is true of any financial instrument. If you stress test portfolios——

Mr. MARKEY. Well, not necessarily. It might not be the right instrument for Arlington, Virginia, to put all of its surplus cash into, OK; 99 to 1 might be too big of a risk for the Mayor of Arlington, Virginia, to take in terms of all of the spare resources for all the policemen, firemen and teachers in town. Arlington's Mayor might want to invest in something that is a 1,000 to 1, or 10,000 to 1, in terms of the risks that could be assumed by them.

And there is a whole series of people—although for some people that is fine, 99 to 1 is fine—for whom it may not be the right instrument, like town treasurers or treasurers of certain types of corporations that might not have the 800 math board capacity to analyze the risks themselves, that might not be advised to put it there as well.

My time is expired.

Let me recognize the gentleman from Texas, Mr. Fields.

Mr. FIELDS. Thank you, Mr. Chairman.

You know, it seems to me we almost have two discussions going on here. One is an academic discussion, and academically it is nice to talk about a risk-free world and the government guaranteeing that the world is risk free. And then we have the real world. You know, a reality check.

And if I understood what you said in your summary, Ms. Beder, you said no additional regulation is called for at this time, and then on page 8 of your testimony, you focus on the risk of firms facing restrictive or expensive regulation relative to that imposed by the countries. And you say from a competitive standpoint, this would have serious consequences for many dealers and end-users in the global marketplace. And so my question is, is there a time or a set of circumstances where additional regulation would be called for?

Ms. BEDER. I suppose that if there were fraudulent activity and there were no regulation against fraudulent activity, I would say yes.

I think we have good fraud controls in the marketplace. I think that if a fund, for example, that has all the pensioners' money involved in it, or all of the money of a State, does not diversify properly and puts all of their eggs in one basket, whether it be in, you know, U.S. Treasury, 30-year zero strips, or whether it be in the derivatives market, that that probably is not in the best interests of the fund holders. Perhaps, some type of prudence guideline would be appropriate there.

In terms of the derivatives markets and the financial markets in general, I believe that regulation in a national context in a global marketplace can only work to the detriment of any country whose financial institutions are major players in the global marketplace, because they will work at a disadvantage. And they will either have to move their business out of the country, or they will not be competitive and will have to leave the business.

Mr. FIELDS. Mr. Vinella, would you like to comment?

Mr. VINELLA. Well, I think it is important to look at this business in the global context. Regulation that is domestically oriented will not necessarily stop these transactions from happening; it will just cause them to go offshore through some type of subsidiary.

If you look at the Euro bond market right now, which is very large in London, that was set up primarily because of the restrictions of U.S. firms issuing foreign debt.

One of the other interesting things that I point out in my written statement, is that in Canada, there are regulations that require Canadian public funds to invest a certain portion of their portfolio in Canadian companies, and what they have done now is they have actually taken swap contracts, which is a derivative, and, in essence, invested outside the United States—outside of Canada and the United States primarily, although on the books it looks like they are holding Canadian equities, they have actually traded that return on those Canadian equities for returns in U.S. equities. So regulations in and of themselves don't inhibit certain types of behavior.

However, I think regulations are important, too, especially in terms of building the confidence in the consumer that the financial systems are, you know, under some type of control. I think in the 1980's, there was a large amount of upheaval, whether it was justified or not, and a certain number of controls, especially in the identity of stress testing, identifying stresses, are reasonable.

Mr. FIELDS. Let me ask both of you another question. This comes from a statement that Dr. Gomez made. I hope I am going to quote you correctly; where you talked about lack of uniformity as if that was bad.

As I understand derivatives, you really tailor-make a product for a particular risk and the management of that risk. And then Dr. Gomez talked about creating a government standardized model; and I assume for benchmark pricing and stress testing.

Is it possible for the government to come up with a standardized model for these products that are tailor-made for specific risk management?

Ms. BEDER. My answer to that is no. I think that, by the same token, while many derivatives are custom tailored, many derivatives look like each other. There are many derivatives which are quoted on scenes and have transparent pricing.

Ninety-nine percent of the derivatives market can either be priced on a screen or data service or a public source such as a swaps monitor. Risk magazine publishes and has databases available. If they are not in that category, one can take prices from multiple dealers, which means that 99 percent of the time one is in a situation where they can have their independent risk oversight function, check whether the prices that are in the fund or the dealers' portfolio, in fact, have a relationship to the market.

Again, the market is the important piece of information. Models are important, but what is important is what happens in the market.

Mr. FIELDS. Do you think it is important to create a standardized model?

Mr. VINELLA. The idea that you put in numbers and a single number comes out and says, Your risk is, I don't think that is possible. However, there are certain methodologies that can be applied that would help in terms of valuing certain derivatives and looking at the risk potentials.

One of the interesting things about derivatives security——

Mr. FIELDS. Even if a product was so specific for a company, or a given set of circumstances, the government could create a model to determine risk in that particular type of transaction?

Mr. VINELLA. If you look at a security as being in essence a cash flow, whether it happens today or tomorrow, you can estimate what the range of that delivery would be. You can't come up with a specific value, but you can break everything down to cash flows. From that point of view, you can develop a value for the security, and you can also get ranges of variance of that dollar value.

If you are going to create an options model for all swaps, that is probably impossible. If you look at everything in terms of cash flows and look at the variability of cash flows over time based on certain economic changes, interest rates, currency exchange rate changes, then I think you have a chance of modeling things in that sense.

Mr. FIELDS. Dr. Gomez, I may not have done credit to that statement, but I really do as a member sitting here and having sat through a number of hearings, it is difficult for me to comprehend how the government could come up with a standardized model or models for the various and sundry, you know, potentialities in this particular type of business. It is hard for me to understand how you would model that.

Mr. GOMEZ. The original motivation for that comes from the basic fact that that theory developed for understanding the rich zoology of these derivatives actually reduces to a contract out of principles. It is because of this that such a rich number of instruments have been able to be developed.

What I meant by lack of uniformity, the implication was in some of the assumptions that are required by these models as implemented by the various dealers, not in terms of lack of uniformities of the richness of the instruments themselves, I agree with the panelists, you cannot develop a single model that will work for a broad range of instruments. But what you can do is you can test the limits of validity of the currently implemented systems and identify those.

Many of the times, for example, you see dealers pricing a compound option, which is one of the more exotic options, underlying itself as an option. But using a model for a standard option to price this kind of instrument is clearly incorrect.

And so the identification of that and the codification of how to handle these instances would clearly increase the level of quality in the market.

Mr. FIELDS. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired.

The Chair recognizes the gentleman from North Carolina.

Mr. MCMILLAN. I thank the Chair.

In all of this it seems that we are wrestling with the issue of where the problem lies. Does the problem lie in the lack of resources or comprehension to understand the nature of risk, or does it lie among the institutions that apply the judgment and either operate with or without benefit of the best available analysis and advice?

I am inclined to think it is the latter. And if you all disagree with that, I wish you would say so. But most of the major surprises or failures in derivatives are the result, not so much because of the nature of the risk itself, but because of the lack of understanding of those who were committed to it. Would you agree with that?

Mr. GOMEZ. Yes.

Mr. MCMILLAN. Does anyone disagree with that?

OK. Then it seems to me that we are talking perhaps about the wrong thing. And I am not sure what the answer to it is. We hold management and board of directors responsible for conduct of operations under our system, and we don't set up the government, I hope, to try to do their work for them. The government really is not very successful at that. Otherwise, perhaps we would have predicted with more accuracy the potential outcome of the aerospace program, or even now, with the current problem before us, the issue of health care. We haven't even bothered to do a model of the economic consequences of the Clinton health care plan, which are going to make the losses by derivatives look like penny-ante poker compared to what we are talking about.

If we want to use that computer out there in Los Alamos, let's apply it to something that really is right here and now, I mean, that we have got a responsibility for doing something about.

Now, I really would like to come back to the same question the gentleman from Texas has raised and just put it to each of you. I was going to ask Ms. Beder to respond to all the questions the committee had addressed to her—I think number 5 would be the one I want to focus on—and anyone else. In terms of what specifically do you think Congress should do or not do with respect to regulation in any area that is going to really get at the heart of this problem? Or is it something that the securities industry itself and others, through experience, are gaining a sufficient awareness of and that the marketplace will do a better job than Congress can do? Would you care to, each of you, address that general issue?

Ms. BEDER. Well, I think there are two places where additional focus is required. In terms of systemic risk, certainly settlement risk should be further looked into. Right now the daily volume of flows through the system is an estimated $2 trillion, and that $2 trillion is primarily settlements on Treasuries and repos and just financial transactions in the market at large.

Now, that means that in the course of 2 or 3 days we are having our entire GNP flow through the system as a country. Imagine if something happened and the system couldn't execute all those payments. I would think that could cause a severe problem in the system, and certainly merits a lot of review.

Clearly, that is not a derivatives issue, but derivatives, like all other financial markets, would be affected if people are not able to make their settlements, either make their payments or receive their payments, because there certainly is a great deal of need for funds to flow properly.

The second issue I think needs tremendous review is the commercial code that is across countries. A good example is just to look at BCCI or Maxwell or ONY—ONY certainly has some derivatives issues—where people have performing contracts in slots with U.S. subsidiaries with bank rep parents, which law ultimately applies? How do you know whether to execute your trade, stay in your trade, cut your losses?

I think those are vital issues of performance, not only to the derivatives market, but to the financial market in general.

As to my personal opinion as to what dealers and end users should do, I think they should certainly conduct a full and total review of any activity, whether it is building a plant or doing the appropriate business analysis of upside or downside risk, or whether it is entering into derivatives contracts. And they should conduct stress tests to see what happens, what if I am wrong, that important question.

Mr. MCMILLAN. Specifically, do you think the government should prescribe what those procedures should be?

Ms. BEDER. No, because again, I think they have to exist at the level of the individual firm in order to accommodate that individual firm's risks. I think it is impossible to have the government reviewing each and every firm and each an every dealer and then saying, here are the specific guidelines and rules you should consider following to be a prudent manager in the marketplace today. I think it would be virtually impossible to do that.

Mr. MCMILLAN. Do you have a comment to the general question?

Mr. VINELLA. I think there are several issues. When I went through the GAO report, the majority of the suggestions in that report are actually fine, and many of the large dealers, because they understand risks probably as much as anyone else, are implementing those kind of internal controls.

However, there aren't real standards for accounting. And if you look at a normal business, or they have external auditors to come in and check the books to help guarantee that the shareholders are being represented correctly by the board of directors, these types of tools just aren't available when it comes to derivative-type securities. There aren't standards of how to price derivatives; there isn't a standard of whether it should be an on-balance sheet or off-balance sheet. I think there are issues like that that through several of the agencies available, the government could take a hand in helping form those kind of accounting standards.

The other thing is just in terms of disclosure, even in terms of notional amounts, people talk about derivatives and notionals. Notionals are not a sign of risk to anyone because, as the term implies, notional is just a notional amount of money. There are actual cash flows that are going to change hands, and that is what should be reflected on the balance sheets.

Certain standards in terms of pricing and volumes would be helpful for disclosure. It is important not to prohibit the business, though, because this is actually one of the most important businesses right now in the financial services community.

It helps the corporations and it helps the dealers as well. I don't think the government is going to be very good at understanding the nuances of those business. Dealers themselves have the biggest motivation for controlling risk.

But I think the accounting standards and things like that could definitely be set by government agencies.

Mr. MCMILLAN. Do you have a different perspective on this, Dr. Gomez?

Mr. GOMEZ. No, I think the proposal of increased reporting standards and the capital requirements is a reasonable one. However, I should point out that as these instruments are usually part of a larger portfolio in consideration of the capital requirements. For example, one should really look at what the effective level of risk is associated with them.

To set a capital requirement for an individual instrument may actually be overkill.

Mr. MCMILLAN. One thing that I think is needed to balance all this, as each of you, I think, has alluded to, is that we don't report the losses that were avoided or the gains that were achieved. The object in getting into them is to avoid loss.

It seems to me there should be some kind of disclosure that measures that, because that is an indication of performance or an indication of a successful execution of a policy rather than simply focusing on the failures.

There seems to be a need for that, both in terms of our comprehension, but routinely in terms of measuring the performance of the risk taker.

Mr. VINELLA. Could I comment on one point? We have been focusing on the use of derivatives in terms of risk hedging. More and more they are being used in terms of financing, for corporations to get financing for offshore operations especially.

One of the examples is McDonald's going into Japan. That is a yen-based currency they have. They made lots of forecasts. In order to fund that, they went into the derivatives market. They issued corporate debt here and used derivatives to translate that into the Japanese operation. So it is not just a risk hedge.

When you look at it in connection with funding rather than risk, the firms themselves have already looked at the liabilities, understand their liabilities, and now what they are trying to do is meet a financial product with those liabilities.

So to kind of highlight your point, that really, in an accounting sense, should be linked together. Just looking at the derivatives contract by itself would be meaningless. You wouldn't understand why McDonald's came up with this complicated structure. If you stress tested it by itself, you wouldn't understand that underneath it they are also selling hamburgers, which is the other side of the trade.

It is important that accounting standards get adjusted to understand that.

Mr. McMILLAN. Do you cover that point you just raised in your written testimony?

Mr. VINELLA. Yes, I do.

Mr. McMILLAN. I didn't get it until I walked in here, so I apologize for that. I haven't read it. That is an interesting point in itself. It deserves much further understanding on the part of this committee, I think.

I thank the Chair, and I yield back.

Mr. MARKEY. The time of the gentleman has expired.

The Chair recognizes the gentleman from Louisiana.

Mr. TAUZIN. I thank the Chair.

If I might follow up on that very excellent discussion, as I read your testimony, Ms. Beder, you outline fairly well, even for someone who doesn't understand the intricacies of derivatives, the situation out there. You indicate that by either measure, by notional amount measure or by replacement value measure, the derivative losses we are looking at would amount to either one-twentieth of a percent or 1.1 percent of either notional value or the replacement value, indicating a very small average amount of losses and a great deal of success in the marketplace.

It further indicates that of those losses, two are very large. I am going to have to ask you to help me with pronunciation. The first is Askin Securities. The second is——

Ms. BEDER. We call it the German company.

Mr. TAUZIN. Cajuns have enough trouble with English. You indicated that even in those two very large losses, which were too large for the capital involved, that three factors should be considered. The first is that thousands of dealers did execute successfully derivatives to great benefit, and then in these two cases that both Askin and the German company losses involved exchanged traded derivatives which are already regulated. And lastly, that it was incorrectly forecasted in market moves, not necessarily the instruments themselves, which caused the loss.

What were the market moves that were incorrectly forecasted that were most responsible for those two large losses?

Ms. BEDER. Well, for example, in the case of the German company, I think they asked the wrong question. For example, they were executing hedges based on changes in the price of energy of various sorts in today's time frame, and where their risk was was the change in prices in 2 years, in 3 years, in 4 years, in 5 years.

So clearly if one constructs a hedge that only looks at today's market, but thinks they are hedging for the future risk, then to the degree that the future risk is different than today's risk, which is in fact what happened, they had a misconstructed hedge.

Mr. TAUZIN. I understand that. I come from an area that has to make those decisions monthly and yearly.

Ms. BEDER. So again, it was a misapplication of the instrument rather than the instrument itself.

Mr. TAUZIN. When it comes to improvements in the marketplace, regulations, improvements from the self-regulatory agencies within the industries, you indicate that there are two factors that are not just related to derivatives but related to financial transactions in general that are serious. One is the settlement risk you just discussed in terms of its huge dimensions and the fact that it covers not just derivatives but all financial transactions. The second is the cross-border issue, which again, covers all instruments, not just derivatives. But then you focus in on the question of additional regulatory capital standards. You indicate you really don't need any. I think the industry does a good enough job.

Mr. Gomez, Mr. Vinella, do you disagree with that statement, that the industry does an adequate job in terms of capital standards within the derivative market?

Mr. VINELLA. I would agree that the big players do. I am not sure about the smaller users of the securities.

Mr. TAUZIN. Dr. Gomez?

Mr. GOMEZ. The larger players do have better standards or have a better understanding than the smaller players.

Mr. TAUZIN. That is true of most markets, isn't it?

Mr. GOMEZ. However, as in the NG case, it was the big players that were involved.

Mr. TAUZIN. In terms of your summary, Mr. Vinella, you indicate the regulation should focus on identification and disclosure of the risks involved and that models perhaps to make that clearer to end users and purchasers would make better sense than having government regulation in this area.

You seem to also agree with that, Ms. Beder, when you say that attempts to freeze the process in risk management would probably cause more harm than good because of the constantly evolving nature of risk management in these areas.

Do you agree on that generally or is there disagreement in that area?

Mr. VINELLA. The financial markets have changed significantly since a lot of the standards were set after the Great Depression and the crash of 1929. There were a lot of regulations put in at that time to protect the public. Many of those regulations are outdated.

The GAO report, one of the major conclusions was not just to focus on derivatives, but to look at overhauling the whole regulatory environment around securities markets as a whole. And I think what we are seeing now is the components of that. A lot of the regulations that exist just don't fit derivatives.

Mr. TAUZIN. What we are talking about essentially, if I can put it in layman's terms, is making sure that the purchasers and the end users of these products have a chance to understand a little better the risk they are taking when they get into these markets.

The whole issue is, how do you model that information properly for those who are going to participate, so that the players who are putting these instruments together and marketing them are playing by some standards rules that purchasers and players can understand.

Isn't that basically what we are all about here?

Mr. GOMEZ. I think that is a component of it. The models and such are available already, except that they are basically proprietary by nature, with the larger players. There is a need, though, to make the framework available to the rest of the market for these players. The smaller ones really need to be able to come up with those decisions independently of the dealer.

Mr. VINELLA. I look at the labeling on the cigarette box. You leave it up to the final consumer whether to smoke or not.

Mr. TAUZIN. But give him the information to make the decision.

Mr. VINELLA. Right.

Ms. BEDER. I guess I would agree and say there should be better disclosure in the marketplace.

Mr. TAUZIN. Is that a pun, better disclosure? That is the way you pronounce your name.

Ms. BEDER. But I want to add one more point on that topic. If you look at that list of losses and you look at a case where arguably shareholders were impacted, such as Gibson Greetings, where the sides of the loss relative to the capital base is far more significant than is the case with Procter & Gamble's loss, certainly in that case you had management disclosing their limits were exceeded and that people acted without authorization, and that in fact the entire activity was unauthorized, and the people who executed those transactions were subsequently removed.

Now, I guess the question I would pose is whether or not that means you need more disclosure of derivatives or whether or not the board of directors should be held responsible for implementing controls more properly.

Who should the shareholders look to for loss also in that case? I would argue that they should be looking towards the board of directors for lack of controls rather than towards more derivatives disclosure.

Mr. TAUZIN. In terms of that area, practices and potentials, you conclude with a very succinct and very profound statement, that is, that it is impossible to protect against clever manipulation, wishful hearing, or lack of prudence in buyers. Hit the manipulation. Everybody can understand, you are going to have scoundrels in the marketplace. Wishful hearing, what do you mean by that?

Ms. BEDER. To give you an example, you personally wish to invest money and your personal viewpoint is interest rates are going to drop, so you purchase a 30-year Treasury security, and what happens is because you believe that rates are going a certain way, you take a course of action.

Of course, your broker probably tells you if you are wrong, the Treasury security is going to lose value much more than if you purchased, for example, a 5 year, but because you wished to hear that this is the best thing to do based on your outlook, you buy the 30-year Treasury. In many cases, I think in every market there are instances where people look at a risk/reward table and look at the section of it that accommodates what they want to hear.

Whether there is full information there or not doesn't keep them from hearing what they want.

Mr. TAUZIN. So even if we have full disclosure on the package, they may only read the part they feel is going to yield them results?

Ms. BEDER. It is human nature.

Mr. TAUZIN. And lack of prudence is the inability of the purchaser to literally give it enough attention.

In that regard, Dr. Gomez, you report that when it comes to the smaller player, that here is an area where perhaps the buyer is not literally at fault, that he is not getting good enough information?

Mr. GOMEZ. That is right. Many of these people have never dealt with these instruments before and are new entrants to the field.

Mr. TAUZIN. There is nothing we can do about that, to the extent other than to make it clearer to them and make the disclosure perhaps conform to some standard models that people can compare, one instrument to another.

Mr. GOMEZ. Making the warnings available to them is the first step.

Mr. TAUZIN. But it is also important that people have the capacity to compare, is that right? I get that drift from your testimony, that if you have standard accounting models, for example, buyers can make a more informed comparison of which instrument they want to get into than if you don't have a standard model.

For example, you opened the discussion on the percentage of losses by indicating there is great division as to how you rank losses, even. If we don't have some standards by which buyers, sophisticated buyers can see one instrument is rated on a different standard, but unsophisticated buyers are looking at apples and oranges and obviously don't have a chance to be prudent because they don't understand the comparison.

Is that a real problem in this marketplace?

Mr. VINELLA. I believe, and we have kind of alluded to it in other topics, one of the biggest problems is that even the corporate boards who we are talking about who normally have the controls, they are not experts in derivatives, they are not experts in mathematics, they get an accounting sheet from their internal auditors, they get one from an external group, and then they say, OK, now I can understand this because it is in terms I understand.

But most of the derivatives cannot be put into those types of spreadsheets and cannot be presented to the corporate boards that way. It is more acute for the smaller users because, again, they may have bought one or two specific products for a financing issue, the treasurer understands it but probably the CEO of the firm will not understand it. And unless there are some kind of standards in terms of reporting, there will be some big problems.

Mr. TAUZIN. This may be the dumbest question I ask, but I just want to get it in perspective. The corporations used to go to the bank and get their financing. That became difficult for them over time. So they started selling junk bonds. That became difficult in recent times. Now they are into derivatives. Is that sort of the trend line we have seen in terms of corporate financing?

Mr. VINELLA. They are still going to the bank. Banks are the ones primarily performing the derivatives transactions.

Mr. TAUZIN. So it is just a new form by which you are deriving bank financing?

Mr. VINELLA. In a sense. It actually turns out, from a corporate point of view it is the cheapest form of financing because you are getting exactly what you need at the exact same times to meet your liability streams.

In the 1980's, it was popular to build dedicated portfolios where you buy Treasury securities that would mature or take coupons on the dates your liabilities would occur. It was a very effective way for a pension fund to manage those risks. Derivatives are the exact same thing. If you have a very good model of your liabilities, you can construct financing that specifically meets those liabilities.

Mr. TAUZIN. It is important at least to note that this is a very useful practice for corporate financing.

Mr. VINELLA. It is the fastest growing market, clearly.

Mr. TAUZIN. That is why it is chosen by so many companies.

Thank you, Mr. Chairman.

Mr. MARKEY. The time of the gentleman has expired.

Does the gentleman from California, Mr. Moorhead, seek recognition?

Mr. MOORHEAD. Thank you, Mr. Chairman.

Ms. Beder, Mr. Gomez suggests that the best risk-management pricing models are extremely expensive and therefore the smaller companies are unable to purchase them. Do you agree with this?

Ms. BEDER. Yes. The simulation pricing models are currently quite expensive. However, dozens of software vendors have begun to build those packages, and there are relatively decent software packages available for managing risk that start as add-ins to desktop software and are certainly in the $1,000 to $2,000 range. I would argue that is affordable for the majority of corporations and financial institutions.

Mr. MOORHEAD. What about services of risk advisers like your company? Could they afford that?

Ms. BEDER. Can they afford—well, we certainly do a lot of work for many end users. We work for many managers of managers who are evaluating the derivative risks in mutual funds and pension funds to be sure that there are not imprudent standards in place. We do a tremendous amount of work for regulators, which is probably the least lucrative of all.

Mr. MOORHEAD. Mr. Gomez, on page 10 of your testimony, you say, "If a leading derivatives dealer decided to make available to the public all of its proprietary systems and software, the major effect would be to increase the overall quality of the market."

That would be proprietary software a major dealer may have spent millions of dollars to develop.

Is there an ability to more accurately evaluate risk as an appropriate marketing tool that is used to attract business? Why would they want to give up their competitive advantage?

Mr. GOMEZ. That was a hypothetical comment I was making to illustrate the fact that if that very unlikely scenario were to happen, obviously they would not do that, the management systems that they would make available to the marketplace would have the net effect of improving the risk management systems for the large number of medium and smaller players in the marketplace.

The point in that comment was really for the government to undertake the public development of the framework and principles for handling derivatives and their associated risk, like the larger players have—this would have the same effect.

Mr. MOORHEAD. Do you think that the SEC and other regulatory agencies responsible for these issues have the resources to analyze and approve a benchmark model, or would it be necessary for them to rely on other institutions like Los Alamos Laboratory?

Mr. GOMEZ. They would have to rely on outside institutions, yes.

Mr. MOORHEAD. Are you saying only a computer lab is competent to regulate this market the way you think it should be regulated?

Mr. GOMEZ. A computer lab such as Los Alamos has a unique set of resources which most private entities, it would be prohibitively expensive to build at the moment.

Mr. MOORHEAD. The SEC has never needed to approve the computers that are used at the stock exchanges in order to do a good job of supervising the function of these exchanges. Why is this any different?

Mr. GOMEZ. The exchanges are basically a set of very standardized products. The things that make OTC derivatives different is their innate flexibility and their customizeability which generally do not make them appropriate for exchanges.

Mr. MOORHEAD. Ms. Beder, do you agree with that?

Ms. BEDER. I largely agree. I think, again, 99 percent of the time anybody can obtain a price for their derivative from a screen or from at least three dealers. So it is fairly easy to determine whether or not your model or however you are valuing the transaction is sufficient. And that certainly is what a prudent management would do, to take steps to see there isn't a variance that is detrimental to one's capital base.

I guess you have to liken it to an institution or corporation who is deciding to perhaps embark in a new marketplace, and have they properly analyzed the market for widgets, and what the currency risk is in that country, and the political stability risk, and again, you come down to good old financial prudence. Have you fully analyzed all the factors you need to to determine—and what if my analysis is wrong; can I afford to spend $200 million on that plant?

The majority of people executing derivatives in that 1 percent category at the very least can obtain a full explanation and pricing from the selling dealer.

Mr. MOORHEAD. Thank you.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Moorhead follows:]

STATEMENT OF HON. CARLOS MOORHEAD

Thank you, Mr. Chairman. I want to commend you on calling this hearing.

The significance of the financial derivatives markets for our economy is underscored by the number of congressional hearings that have been held on this subject in the past few months. Additionally, a number of legislative proposals are pending and I have no doubt that more will be introduced soon. I believe this process is in keeping with the best traditions of the Congress.

Derivatives appear to be very useful tools for companies and financial institutions that wish to manage their risks. There is no doubt, however, that they are complex instruments that require high levels of sophistication to use safely. The press has had the unfortunate opportunity of reporting instances in which losses have been suffered by companies that may not have understood their risks or may have improperly valued their derivative positions.

I look forward to the testimony of these experts today. I do not know how deeply Congress will get involved in the technical side of assessing the value of financial instruments, but their testimony today will help us understand the challenges that face corporate managements who are responsible for using derivatives. I yield back the balance of my time.

Mr. MARKEY. I thank the gentleman.

Let me go through a series of questions to narrow this down so we can have an appreciation of where you are on these issues. Just very simply, try to respond briefly so that we can kind of narrow the field of dispute, if possible.

Would you support requiring currently unregulated derivatives dealers such as those affiliated with securities or insurance firms to register with the SEC? Do they have to register with the SEC?

Right now there are only six securities affiliates and three insurance companies out of the whole universe in the country who aren't under it because they went over and set up this separate entity to avoid regulation. Do you think they should be included as part of the universe that is constantly looked at?

Ms. Beder?

Ms. BEDER. I believe that all types of transactions should be regulated similarly across all types of financial institutions. So I agree something needs to be done there.

Mr. VINELLA. If it walks like a duck, I would say it is a duck. So I would agree they should be under the same standards.

Mr. GOMEZ. I believe some action should be taken. However, the particulars are actually outside of my purview of expertise, so I will not comment on that.

Mr. MARKEY. Thank you.

Empowering the SEC to set capital standards for such dealers, conduct inspections or examinations of such dealers, and receive financial reports from such dealers.

Ms. BEDER. I believe that full financial information should be available. I believe that capital standards currently in the marketplace are sufficient.

Mr. MARKEY. But should the SEC be able to set them for these firms, for these securities and insurance firms?

Ms. BEDER. My answer is no, because they don't right now.

Mr. VINELLA. I would agree with that answer. I am not sure the SEC would be the right body. That is outside my expertise.

Mr. GOMEZ. I have no comment.

Mr. MARKEY. Should someone be able to set capital standards for these firms? Should there be any capital standards that are set? Or should it all be left to that firm's discretion. How do you deal with the bad guys, in other words?

Let's say there are 10 percent of the firms that are really bad people and they are going to prey upon the 10 percent most vulnerable, and that is the whole market niche identified at the Wharton School, you can make a lot of money fast if you take the 10 percent most dangerous products and try to sell them to the 10 percent most vulnerable with minimal capital standards. Should somebody have responsibility for determining capital standards for that 10 percent?

Ms. BEDER. I think it is a concern but not a big problem. Again, the derivatives have no bigger risks than any other financial instruments——

Mr. MARKEY. Well, the banks already set standards, as you know, for bank dealers. Should someone set standards for security or insurance firm dealers?

Ms. BEDER. I believe the playing field should be leveled. Whether that means you should remove the bank capital standards or——

Mr. MARKEY. Do you think there is an argument that there should be no standards? Do you believe there is an argument for that?

Ms. BEDER. I think that institutions should have sufficient capital to conduct their business. And if they don't, there won't be any business.

Mr. MARKEY. I understand what you are saying, but——

Ms. BEDER. I believe in market enforcement.

Mr. MARKEY. We are dealing with the real world, so we have to decide, in the real world, where there are bad people, as in every industry, including ours, how do we deal with those people? Should there be some minimum standards? Do you have a problem with the bank standards?

Ms. BEDER. Yes. I think it is unfair relative to other institutions with whom they have to compete.

Mr. MARKEY. So we don't see any likelihood that the bank standards are going to be removed soon?

Ms. BEDER. No.

Mr. MARKEY. So who should set the standards for the other institutions that don't come under bank regulation?

Ms. BEDER. Let me just answer the last question, which is to say that in most cases dealers' individual capital standards far exceed what that regulatory requirement is. The individual standards imposed by institutions is quite significant.

Mr. MARKEY. So it is not a burden, is that what you are saying?

Ms. BEDER. I think that——

Mr. MARKEY. Because they do voluntarily comply with what the minimum is.

Ms. BEDER. Regulation is a burden because it has a cost. To the degree you become noncompetitive to other financial institutions——

Mr. MARKEY. I don't understand. How can they put it over what the minimum is? Where are the burdens?

Ms. BEDER. The increased reporting requirements that typically go along with a requirement like that.

Mr. MARKEY. I understand that, but again, given the dollars that are being dealt with here, the amount of additional paperwork is relatively minimal, especially if the good firms are already exceeding that. Just check the forms. Yes, we exceed—it doesn't seem like it is a lot of paperwork to confirm the fact that you have exceeded the minimal standards.

Ms. BEDER. Again, you have to look at the difference between——

Mr. MARKEY. I mean, there is a cost benefit here to the society as a whole, to the banking system as a whole, to the confidence and stability that is created if these forms aren't filled out. And as you point out, most of the good firms exceed it. It doesn't seem really like an excessive regulatory burden.

Ms. BEDER. I again believe that it is from the standpoint that if you pick a single standard of capital or a standard short of having enough capital to conduct your business prudently and to be sure that you are able to not go out of business, I think that that is a difficult standard to find a single formula for.

And again, unfortunately, what happens if you pick a single standard is that it is not the same standard that gets employed on doing the prudent capital——

Mr. MARKEY. So you don't think the banking regulators are doing a good job in this area in the way they select the standards?

Ms. BEDER. I don't think my statement says that. Most dealers have found their capital standards, how they count, in my experience, is quite different than what the regulatory requirement is, and in fact it ends up being something one does not have to worry about because their individual standards are far in excess of what that calculation requires.

Mr. MARKEY. I agree with that point. Again, we keep coming back to that point, and I agree with that. I was wondering if you felt the other institutions should have some minimal requirements.

Should there be someone that sets standards for securities and insurance firms as well?

Ms. BEDER. No. I think I have answered to say I think the playing field should be leveled and——

Mr. MARKEY. And if there are banking regulations and they are not going to be taken off the books, the level playing field would logically dictate then that the securities and insurance firms would also have to meet those same standards, or some similar standards. Would you not say that, logically?

Ms. BEDER. Assuming they can't be removed, absolutely.

Mr. MARKEY. So you moved towards yes, if the banking regulations stay on the books.

Ms. BEDER. I don't think capital regulations are called for at this time in the marketplace.

Mr. MARKEY. But you also want a level playing field.

Ms. BEDER. I want a level playing field not only across types of institutions in the United States but also in a global playing field.

Mr. MARKEY. Right. We don't have jurisdiction over the global marketplace yet. But the globe does respond to the American marketplace as the standard in most instances, and this is one of the areas where they do. So whatever standard we set would have a high likelihood of becoming the standard.

OK. Did you go to law school at any point in your career?

Mr. Vinella.

Mr. VINELLA. I guess I am the only one that didn't go to a Massachusetts school here, since you brought up schools. Is there something I should know?

Actually, if you look at OTC instruments, there are capital requirements that have been de facto accepted by the institutions, because before a firm will trade with another firm they have to have a certain credit ratings. Those credit ratings require a capital base. So I don't necessarily think that you would have to, from a regulatory point of view and government point of view, instill those.

Mr. MARKEY. So it is not a large burden, then.

Mr. VINELLA. No.

Mr. MARKEY. Would it be a large burden, Dr. Gomez, for these other firms to meet the same standards as the bank institutions meet right now?

Mr. GOMEZ. As they already exist for a large number of instruments, I would not think so.

Mr. MARKEY. How about protecting investors by allowing appropriate sales practice rules including suitability rules to be established for such derivatives dealers?

Ms. BEDER. I agree that merits further looking into. I think that the subcommittee's and others' warnings in that area have served as a useful wake-up call. To that end, the international swaps and derivatives associations have formed committees to look into suitability of the members and their practices in the derivatives area.

Mr. MARKEY. Again, here the OCC has already issued suitability guidelines for the bank dealers. We are just wondering whether they should extend over to the securities and insurance firms.

Mr. VINELLA. I would agree they should extend.

Mr. GOMEZ. I have no comment really on that.

Mr. MARKEY. Enhance the SEC's anti-fraud and anti-manipulation authorities over such derivatives dealers, as they do over all other dealers.

Ms. BEDER. I am sorry. Could you rephrase the question?

Mr. MARKEY. Again, should there be regulations that the SEC puts on the books, should we pass legislation that gives the SEC authority to create anti-fraud and anti-manipulation guidelines over such derivatives dealers?

Ms. BEDER. You mean outside of who the SEC currently regulates?

Mr. MARKEY. Yes. We had this category of where securities firms and insurance firms are engaging in this kind of activity. There is a regulatory black hole here that we are trying to fill and to have regulations equivalent to other areas where the SEC now has jurisdiction in the anti-fraud and anti-manipulative areas. These products can be manipulated and fraud could be perpetrated.

Ms. BEDER. All financial instruments could be manipulated and fraud perpetrated.

Mr. MARKEY. So do you think there should be similar protection as there are in all other financial products that the SEC should be able to afford to consumers?

Ms. BEDER. I think the SEC already has——

Mr. MARKEY. They do not have clear anti-fraud authority in this area, over derivatives.

Ms. BEDER. Oh, over derivatives specifically? Right. I think the existing laws surround derivatives by virtue of the fact they are linked to the instruments themselves.

Mr. MARKEY. They surround but do not actually clearly give authority to the SEC. If they don't, would you think they should be given authority.

Ms. BEDER. Not being an attorney, it is hard for me to interpret the specifics in the laws in that fashion.

Mr. MARKEY. This is the hole in the doughnut. We have this wonderful little loophole that is carved out in the center of all of the rest of the securities activities without any clear line of authority—what is it down there in Louisiana?

Mr. TAUZIN. Beignet. There is no hole in a beignet.

Mr. MARKEY. We are trying to create a beignet here.

Ms. BEDER. I think the current laws are sufficient. And in fact if you look at the cases where people had claimed derivatives fraud on the part of their traders, it is being pursued under the existing legal system. I think that is quite a formidable law to be up against.

Mr. MARKEY. And you think they should be able to do that? You think they should be subject to anti-fraud and anti-manipulation?

Ms. BEDER. Right. So I think the existing laws are sufficient.

Mr. MARKEY. This is the Chicago School of Economics philosophy.

Mr. Vinella.

Mr. VINELLA. I think we are getting to a point where it is just easy to state, a lot of these laws were enacted before derivatives existed. If the idea is to have them conform to the standards of the other securities, I wholeheartedly support that.

Mr. MARKEY. Dr. Gomez?

Mr. GOMEZ. This is really outside of the purview of my expertise. I am not going to comment on it.

Mr. TAUZIN. Good move.

Mr. MARKEY. Are you enjoying your trip to Washington?

Finally, to define equity derivatives as securities, thereby clarifying their coverage under the anti-fraud provisions of the Federal securities laws.

Ms. BEDER. Again, not being a legal expert, my understanding is that a tremendous amount of work has been done in the area of whether derivatives are securities in that the resounding answer to that question has been that in fact derivatives are not securities.

Mr. MARKEY. An equity option is a security. But an equity swap isn't, as it is now defined. That is the question.

Do you see any reason why it wouldn't be considered a security?

Ms. BEDER. I really have no opinion on that.

Mr. MARKEY. Mr. Vinella.

Mr. VINELLA. I think that is a bit too specific.

Mr. GOMEZ. Same here.

Mr. MARKEY. My time has expired.

The Chair recognizes again the gentleman from Texas.

Mr. FIELDS. Ms. Beder, in fairness I think you have given a number of real-world scenarios in your responses and in your statement. You basically testified there is not a systemic risk, if I understood your testimony. You also testified that there is a fear that markets can move overseas with extensive government regulation.

What I would like for you to talk about for just a moment is real-world due diligence, the diligence that is done, because sometimes I think the impression is left that no one is doing the due diligence.

As I understand the classic derivatives situation, you have a principal in the middle actually executing two separate transactions, a principal that is actually responsible for the consequences of both transactions, and that in the real world you have got very sophisticated people dealing with very sophisticated people.

That does not mean there is no risk. But to me it does mean, and from what I have learned, there is a great deal of due diligence by that principal and by the classic two parties to that derivative transaction.

Is that true?

Ms. BEDER. Yes.

Mr. FIELDS. Could you walk us through the due diligence that is done?

Ms. BEDER. In particular, what happens is that first of all board-level audit, if not oversight, if not already implemented by most end users is being implemented based on, if nothing else, a desire not to read about yourself in The Wall Street Journal.

Mr. FIELDS. Do you agree with what Mr. Vinella said, that CEO's and corporate boards don't understand derivatives transactions?

Ms. BEDER. No. My experience is those that enter into transactions understand them, and if you look at the very low level of losses, that is a testament to that.

Mr. FIELDS. Let me just interject to you, Mr. Vinella, I don't see our government's role as educating CEO's and board members and trying to manage risk for them in their independent ventures. And in the four hearings I have sat through, I haven't seen indication or testimony that leads me to believe there is systemic risk.

Go ahead, Ms. Beder.

Ms. BEDER. My experience is that besides putting in—also, in the case of derivatives, my experience is that you actually can put the information on a piece of paper and explain virtually all aspects of derivatives quite simply to those who employ them.

And what dealers and end-users are doing specifically to manage the risks of derivatives and all other financial transactions is that they are requiring at the board-level audit and oversight, they are putting in specific written policies as to how derivatives and other financial instruments will be used.

Internal controls are being set up which include having someone check whether or not the Mark 2 model value that is being obtained for their particular model has a bearing on the market.

I can't underscore the importance enough that theoretical models are a vital component of the market, but they are not sufficient for proper management controls. One must also have a market viewpoint and check where the prices are in the market at any point in time.

Our experiences are that people in the dealer community are certainly performing a mark-to-mark daily at a minimum, and end users, as driven by the recommendation in the G-30 recommendations, are starting to do that as well.

I might add that the number of people in the marketplace who are conducting self risk assessments is quite extensive. In fact, one could call 1994 the year of the self risk assessment where people are looking literally at their policies and controls and procedures and stacking them up against the recommendations in the G-30 report, in the GAO report, in all of the recommendations from the OCC that have come down as well.

Mr. FIELDS. The point I am trying to drive at, you have a principal in the middle that is responsible on both sides of the transaction. That principal is not going to prey upon someone else. And you are dealing in a very sophisticated marketplace with a number of levels, and most entities reviewing such transactions and understanding the consequences of the transaction.

But again, if I understand the situation, there is no way to guarantee there is not a risk in a currency fluctuation or a fluctuation in interest rates or some other type of derivative instrument that is managed for risk.

Ms. BEDER. That is correct. You cannot guarantee, for example, that the Fed won't raise interest rates or the Bundesbank won't lower them. You can't guarantee that a central bank won't take action to change everybody's expectation about a currency.

For example, when the British government decided to pull the pound out, I think that was quite surprising to a lot of people and caused a tremendous amount of people's models to fail, again, because they didn't ask that question: What if I am wrong?

To solve that, as people have done in this market, they have begun to actively conduct stress tests and simulations to look at those situations and ask the question, Do I have enough capital? If I am wrong—99 percent of the time I am going to think I am right.

Mr. FIELDS. Thank you.

Mr. TAUZIN [presiding]. Thank you, Jack.

Ms. Beder, let me apologize for mispronouncing your name. In regard to your discussion of the across-the-board regulatory risk issue, you mentioned the need for regulators to agree on what constitutes the acceptable netting the risk exposures. Would you run that by me a bit? What do you mean by the netting of risk exposures?

Ms. BEDER. Certainly. Suppose I do a transaction with you where I agree over the life of it to pay you $100, and then later on we do a transaction where you agree to pay me $75. Is my risk $25 or is my risk $100 plus $75? The issue of netting is tied up with whether one can offset exposures against counterparties.

The way the commercial code works right now is that within the United States and within most jurisdictions, people have solved that answer, and in fact if it is part of the law in the United States that, for example, in a bankruptcy situation, one can net, what does not exist is any certainty over what happens if one party is in New York and one party is in a different jurisdiction, whether it be London, New York, or any other—I mean, London, Tokyo, or any other location, for that matter, that presents tremendous risks to both dealers and end users who have exposure to dealers with significant cross-border risks.

Mr. TAUZIN. Where is that problem solved?

Ms. BEDER. I think it is solvable. I think the committees that exist of the regulators of the various countries who are looking into this and entities like the Bank for International Settlements are doing—and many of the industry associations are doing a good job at starting to get those issues of partners tabled, given their tremendous linkages in the financial system.

Mr. TAUZIN. You also mentioned differences in bankruptcy and default procedures cross border that could significantly affect the risk of investors. Again, where is that adequately resolved?

Ms. BEDER. Again, it has to be a new form. Certainly the Hague doesn't seem to be the place to do that, if you look at what the

Hague is still working on, the freezing of the Iranian assets. That was pretty long ago. So I think we have to find a better vehicle.

I agree with the calls by the regulatory community to increase the harmonization of regulation across countries. I think it is a vital component to markets at large, not just derivatives. It is all financial markets.

Mr. TAUZIN. Mr. Vinella, you mentioned, with reference to accounting standards, that the cash flow accounting method is, quote, "the only natural reporting procedure viable for complex derivatives."

Would you explain what you mean by the cash flow accounting method, and why you believe this would present a clearer picture of exposure and values?

Mr. VINELLA. One of the intricacies of a derivative is that it is usually very idiosyncratic to one particular strategy, one particular customer. And if you look at just a notional amount on which the interest rate payments were based, that notional amount doesn't really reflect what the total liability is of that contract.

So, for example, if I had a loan that was a notional of $100, but I was going to pay you 1,000 percent each day, the notional of 100 doesn't really reflect I am going to have to make a $1,000 payment to you every single day for 10 years. So the cash flow is really looking at what the true liability is.

Cash flows are also easy to construct, because each single derivative, you have to deliver something and that thing can be valued in terms of cash using a net present-value calculation. And this is really kind of the way that all standard pricing models work anyway. It is just explicitly making that part of the accounting record.

The notional component is a real worry to me just in the sense if I looked at the credit of a firm, I looked at the balance sheet, notional amounts would give me no idea of what the inflow or outflow of capital would be. So I push the cash-flow method.

Mr. TAUZIN. Let me get a comment from either one of you on that.

Ms. Beder, you want to comment on the suggestion that the cash-flow accounting method is the only natural procedure viable for these complex derivatives?

Ms. BEDER. I don't think it is the only procedure. I would be happy to provide some commentary on that for the record. After the fact, I will give you some written on that, because it is quite an extensive topic.

But what I would point out is there are tools available to deal with the type of mechanism that Mr. Vinella points out, which is that to the degree that one has a $100 million transaction which is leveraged 10 times, when one goes to the board for approval, one could present that as a $1 billion transaction, which it properly is reflected in that particular circumstance. And again, I think that is a situation of prudence. And having had a couple of losses on leveraged transactions in the marketplace, we are seeing people employ that as one of the standard policies, controls and procedures that they are requiring at the board level for approval of transactions.

[The following information was received:]

In response to the subcommittee's question regarding the accounting treatment for derivatives transactions, I believe that greater transparency would be of value to dealers, end-users, regulators and others involved with the market's infrastructure. However, I disagree with Mr. Vinella's statement that few auditors understand derivatives. There are several initiatives under way by the accounting profession which specifically address the accounting treatment of derivatives, including work by a high-powered task force which has actively solicited commentary from active derivatives participants and interested parties. The educational and technological initiatives by accounting firms in the area of derivatives are significant. I am personally aware of the efforts by several large accounting firms to not only provide in-depth training of auditors in derivatives but also to build or purchase derivatives systems to facilitate analysis of clients' derivatives use. Regarding Mr. Vinella's recommendation that accounting be on a cash flow basis, I believe this would be more misleading than accrual accounting. For example, a transaction which has zero or few payments in the early periods, followed by large payments in the later periods would be distorted under cash flow accounting. In addition, I believe cash flow accounting would introduce significant volatility into earnings reports by both dealers and end-users. This may be seen by imagining a corporation who enters a derivative transaction to remove the interest rate risk in an upcoming borrowing. Under cash flow accounting, the corporation. In addition, I believe cash flow accounting would introduce significant volatility into earnings reports by both dealers and end-users. This may be seen by imagining a corporation who enters a derivative transaction to remove the interest rate risk in an upcoming borrowing. Under cash flow accounting, the corporation would report a windfall gain or loss at the time of the borrowing, rather than reporting the economic result of the hedge over the life of the borrowing.

Mr. Tauzin. Dr. Gomez?

Mr. Gomez. I prepared no comment on that.

Mr. Tauzin. OK.

Thank you, Mr. Chairman.

Welcome back. We had just settled on a couple of banking issues.

Mr. Markey. [Presiding.] So does the gentleman want to be recognized?

Mr. Tauzin. I am through.

Mr. Markey. You are all done, OK.

Let me ask you a couple of other questions, if I could.

Mr. Vinella, earlier in your testimony, you noted that derivatives are employed by many end-users to circumvent regulations, and you mentioned up in Canada where there are some pension funds who are using derivatives to evade certain regulations. Are there any analogous situations here in the United States?

Some, for example, have suggested that certain mutual funds may use derivatives to evade SEC rules on leveraging by funds. Could you give us some insight into that in particular?

Mr. Vinella. I can't give you specific examples. However, with the way that OTC instruments are constructed, they are actually just contracts, they are not specific securities transactions. So if a prospectus is written for a mutual fund which states that certain holdings will be in equities, certain holdings will be in Treasuries, they can go in from a contractual matter and just swap that type of a return for anything else they would like to do.

So, in general, the opportunity is there for anyone who would like to do it. I can't tell you of anyone who is doing that.

Mr. Markey. Right. But the potential is there?

Mr. Vinella. Yes.

Mr. Markey. Do you agree with that?

Ms. Beder. Yes, the potential exists for all financial instruments.

Mr. Markey. Well, again, we just want to identify where the problem areas are so we can ensure the SEC has the proper authority, so there is no evasion of standards which are applied to other products as well.

Ms. Beder, based on your general experience as a consultant to many corporate end-users of derivatives, what do you think that corporate and other end-users need to do to improve internal controls over their derivatives activities?

Ms. BEDER. Well, they need to put in specific board-level audits, some type of independent risk-oversight function. They should have specific written policies. They should mark their positions to market, I believe, daily, at a minimum.

They should stress test not only their underlying assumptions as to market moves, but also stress test the underlying assumptions as to movements in model assumptions. I believe that they should also establish reserves for credit, liquidity, operations, and model risk.

Mr. MARKEY. Some have suggested that corporate governance be improved so that periodic reviews of a company's derivatives activities by the board's audit committee or independent directors be required.

Do you think that would be a good idea?

Ms. BEDER. Is corporate governance—do you mean just in prudence?

Mr. MARKEY. Yes.

Ms. BEDER. Yes, I believe that——

Mr. MARKEY. They should do it prudently; but should there be a requirement that they have to do it?

In other words, should the SEC or banking regulators require that they——

Ms. BEDER. Be prudent?

Mr. MARKEY. Yes. Require, yes, that the audit committee as part of their responsibilities, has to conduct such a review?

Because there is a temptation—we have a dispute here to a certain extent, between you and Mr. Vinella, with regard to how simple it is to understand all this. And I do think that if you have an ability just to pass it off, that there would be such a likelihood from my perspective, given my relationship with mathematics, and I think a lot of people who are successful in business don't necessarily have to be that knowledgeable in mathematics.

I mean, a lot of them just come out of sales. And yet the effects of decisions which they could make have tremendous consequences. So it would just be ensuring that the corporate responsibility is discharged in this area, that there be a full review, and that it be required that they do it.

Ms. BEDER. I guess my answer is I believe the market polices you, because if you take imprudent actions, you go out of business.

The second comment I would make is that just the same way as it is incumbent upon management to make sure they have people who understand how to manufacture and run a plant, it is incumbent upon them to be sure they have people in their Treasury operations who understand how to operate in today's financial markets, of which derivatives are a vital component.

Mr. MARKEY. Ms. Beder, is it your belief that a board where the majority of directors are independent are more likely to fulfill their responsibilities to oversee a company's derivatives activities and risks in a more reliable way than a board where insiders and management predominate?

Ms. BEDER. I have no opinion on that.

Mr. MARKEY. Most of them have no independent staff; is that not correct?

Ms. BEDER. I don't know.

Mr. MARKEY. You don't know. OK, I won't go down that line of questioning then.

Mr. Vinella, virtually everyone who has commented on the growing importance of derivatives agrees that improving the quality of legally mandated disclosures is an essential step in helping us understand the risks as well as the opportunities created by these products. The GAO has recommended that the SEC enhance these disclosures by requiring that a company's internal controls, policies and procedures that should govern the types of financial risks that the company knowingly assumes be subject to an annual independent audit, the results of which would be certified by outside accountants. Do you think that would be a good idea?

Mr. VINELLA. I think in the area of derivatives, there may even be a problem that the external auditing firms aren't capable in every sense of coming in and looking at the controls. These products tend to be varied and idiosyncratic and specific to the users, and the external firms would have to understand not only the derivatives position, but also the underlying position that went with the derivatives position. So I think in theory, yes, it would be a nice thing; in practice, it may be very difficult.

Mr. MARKEY. You are not sure even with regard to the competence of those who would be the so-called "external auditors"?

Mr. VINELLA. Well, it has been my experience in the past, even with simple Treasury securities, the external auditors come in, and they just don't know the nuances of the market. Unless you have enough time to spend with them to really show them what you are trying to do, they at first glance may misunderstand.

Mr. MARKEY. I don't disagree. I mean, Paine Webber, Joe Jett is a perfect example.

Mr. VINELLA. He was at Kidder.

Mr. MARKEY. Kidder, I mean. He was a perfect example of some of the difficulties that could exist for the firm itself in supervising their own people as they are defrauding that firm itself.

Mr. VINELLA. I think just to reemphasize again, if you had good accounting standards that external firms and internal firms—the internal audits and the external audits—could at least match, that would go a long way. Having an external firm come in to look at, let's say, risk models or things like that, would really take too much time and would be way outside their——

Mr. MARKEY. Could I just go off on an aside here? There is a little bit of a disagreement between you and Ms. Beder with regard to how simple it is to explain a derivative and its risks in an intelligible and fair way to an executive of a company. Where is the disagreement here in terms of the ability to understand this, if you are not truly sophisticated in advanced mathematics?

Mr. VINELLA. I think it all comes down, from my point of view, what the definition of price and what the definition of risk is. I am not so concerned about dealers, because that is their business and the shareholders in a dealer firm understand they are going to take risks and try to reap rewards. So when you look at risk from their point of view, it may be market fluctuations or price fluctuations.

From a corporate point of view, if I use the McDonald's example again, it is easy to explain risk, because he understands what his needs are. He understands the hamburger market in Tokyo, he has done his due diligence and market surveys. And when you look at the derivative contract to match those liabilities, it is a fairly straightforward discussion.

If I was to come up and say, OK, we are going to have a reset on the 3rd of June, it is going to be a yen-dollar reset, it is going to be based on LIBOR, plus something, no corporate board member will really understand. If I say you are going to get a cash flow from your operations in Tokyo on the 3rd, and we don't know where the yen-dollar ratio is going to be right now, so we should understand that, it becomes very intuitive to the people who are consuming these products. And most of the corporations that use derivatives, that is the way they come up with these products.

On the Street, it is called structuring, you actually build the product for the specific need. So while you are going through the development of that product, it is also easy to look at the risks, because you can test certain market assumptions. Well, what would happen if the yen-dollar ratio was 20 percent higher than it is today?

What happens if it is 20 percent lower?

So looking at it from those points of view, it is very heuristic. If you come in again at this very complicated swap and now say what is its risk, it is a very difficult thing to analyze.

Mr. MARKEY. Well, let's go to Procter & Gamble situation, where there was speculation at the heart of the strategy there.

You walk in, you have got an algorithm that stretches from here to eternity, and you have got to simplify it, I guess, down to something that is intelligible for the corporate executive. He understands the simple explanation, but does he really understand the algorithm in terms of what all the variations and permutations and assumptions are that are built into the algorithm itself?

Mr. VINELLA. That is why I refrain from trying to use theoretical prices as an auditing, and look at the actual cash flows. Because I can go into any very complicated security and break it down into simple deliveries.

For instance, if I look at an option, I can say what happens if it gets exercised; what happens if it doesn't get exercised?

If I look at a series of 20 options, and I just looked at it as one single security and then put it into a pricing model, that is going to be very difficult to understand.

But if I look at what happens if every single possibility occurs, I can find a range of good and bad scenarios. And that can be explained to a corporate board member. You say, OK, we have got this thing on, we are trying to do that with it, but if, you know, the worst case is we lose this much, and the best case is we make this much based on these types of all the variabilities, that is kind of in a sense what the Monte Carlo methods do.

But one of the problems with even the concept of price, you can argue all day long what something is worth, and if you look at the models and start having to validate each single model and then all the assumptions underlying the model and then even the data that went into the model—for instance, beta is the way that most people look at market risk in terms of equities, very well-known, William Sharp who developed it won a Nobel Prize. Yet other firms don't have a standard of how they compute beta.

There are many, many different ways of doing it. You can say it is a beta; that is not quite enough.

Mr. MARKEY. Dr. Gomez, this is a market opportunity for Los Alamos to fill this gap so that there may be some independent analysis that is at the disposal of executives.

Mr. GOMEZ. That is right. Many of these instruments can be qualitatively explained to the upper management and a lot of the end-users, but the real question really is how much the quantitative risk is. And to understand that, it is a much more complex problem.

And in many cases, the assumptions you make, as Mr. Vinella was saying, you know, even by looking at the cash flows, you still have some implicit model that you are using as to how you discount these to come up with a specific value.

And so even there, you are relying on a very sophisticated computational hardware, which could either be a computer or simply your brain, but you are still relying on fairly sophisticated models, and then codifying those and really identifying their limits of validity is an important issue.

Mr. MARKEY. Mr. Vinella, on page 9 of your prepared statement, you note that speculation is one of the major uses of OTC derivatives since, quote, "because of the lack of true margin requirements, OTC derivatives offer the speculator the most effective and economic investment possible."

Do you think that some sort of margin requirement should be applied to OTC derivatives to curb excessive speculation or overleveraging?

Mr. VINELLA. Again, with OTC products, the counterparty is already assuming the risk of the trade. If this is not something that is going to go to a mass population, there is usually one counterparty. And before that deal can be made, the credit of both firms, it usually undergoes a great deal of analysis. So I don't necessarily think that margin requirements have to be—the margin requirements have to be enacted for that?

Mr. MARKEY. You do not think?

Mr. VINELLA. No.

Mr. MARKEY. OK. Well, how do we deal, then, with the financial bubble that could be created?

Mr. VINELLA. I don't——

Mr. MARKEY. See, our problem here is since we sit here through 1987, 1989, and everyone comes, they sit right where you are sitting, all the experts in program trading, July, 1987, they all sat there: No problem, don't worry. Are you sure? Absolutely, program trading is not a problem. It is all very well understood by all of us. And we had all the geniuses sit right here.

I started writing letters in early October, and I get blamed for writing the letters because it is causing concern about program trading. The market drops 30 points as Markey writes letter about program trading. I mean, I am not that powerful, you know. It doesn't make any sense here.

So I guess the concern that I have is that we have been through all of it, those of us who have sat here for 18 years, the various projections that are made by those who have a stake in these products with regard to their upside and their limited downside. And part of our responsibility is just to make sure that these financial bubbles which occur periodically don't have an adverse effect upon innocent bystanders, including the system itself.

And if there is a financial bubble which could be created here, how do we handle that if it becomes excessively dangerous? What powers do we need to give to the regulators to be able to control that?

Mr. VINELLA. Again, if you look at it from the dealers' point of view, I believe that the shareholders and the board members of a dealer understand risk and that they are willing to take. I think the major focus should be on the real consumers, the shareholders who are investing in a company which they assume is manufacturing cars and not getting 80 percent of its revenues from derivatives positions. I think that is where the real focus should be.

In terms of program trading, let me also state for the record, I don't personally believe it had a lot to do with October 19th. Most people didn't do program trading. There was one interesting strategy that was involved in October 19th, which was portfolio insurance, which was alluded to in Dr. Greenspan's statement, and that was a hedging strategy using derivatives, where every expert at the time said this is a very good thing, it was a very growing market.

I think one of the biggest risks, and it is not really talked about in general, is liquidity. And you can look at a mathematical model and it will say here is your variability of price movement, but if you can't trade it and you can't get out of it, you are stuck all the way to the bottom. I think there are lessons to be learned from portfolio insurance.

Mr. MARKEY. Well, I was using program trading to cover a broad range of products, including portfolio insurance. But we do think using that broad terminology, that you need the underlying condition, underlying level of volatility, which was the excessive leverage in the system at that point in time, and the very great degree of nervousness that was created out of the marketplace.

When it is triggered, you have volatility, level 1. What happens is you now have all these automatic systems that start plugging in which hits volatility, level 2. And it leads to this plummet, far beyond what volatility, level 1, would have called for.

But because all these automatic programs start to kick in, you do get this 500-point drop in 1½ hours, which is not anything related to any rational decisions which are being made by anyone. It is pretty much computer-driven. And again, beyond anyone's control at that point in time.

And we passed the Market Reform Act of 1990, because we had pretty much the same regulatory black hole. That is that the CFTC had the ability to see what was going on in this futures marketplace.

The SEC did not have any authority whatsoever to deal with the impact that the futures market was having on the underlying equity market every single day. And we had to pass legislation to give the SEC the ability to see what was going on so they could talk to the CFTC with a base of knowledge about how the equity marketplace was being affected.

And we would have that dialogue that would ensure that you would have better coordination amongst the regulators and amongst the product, because it is a seamless market, the options and futures equity marketplace; they all do interact on a daily basis, a minute-by-minute basis.

Same problem we have right here. We have banking regulators with authorities that are adequate and being exercised. We have a regulatory black hole, though, with the securities and insurance regulators, who do not have similar authority. They are flying blind. They are subject to the Lamont Cranston phenomenon here. They are dependent upon the kindness of strangers, the banking regulators or the firms themselves independently acting in goodwill, but without the real ability of SEC to know with confidence how those activities are being conducted or what the risk is to the system or to individuals within that system.

And we are just trying to basically deal with the same problem that we found back in 1987, which the Brady Commission report identified, which indicated that there was a single marketplace, but with a large percentage of the players, of the regulators, without adequate information; unable to know how large traders were, know what the positions were, know how the clearance system was working, and being able to talk to the firms on a basis where volatility is getting too high.

We are having the same kind of discussion here right now. No intention of banning any product or banning any technology. Just to make sure, however, that there is proper information so that the worst players or the most dangerous activities are understood and that they are not allowed to trigger a collapse which affects parties that never understood that they were at risk as well.

And that is all we are really trying to do here again, just to walk through a set of technical problems that can be, we think, dealt with in a reasonable fashion without affecting the market in terms of the product or the technologies themselves.

And again, at the time those who were opposed said they want to ban program trading, they want to ban technologies, when the reality is this is the Telecommunications Subcommittee. We are the ones who are primarily advocating the introduction of global telecommunications information. We want these technologies to be out there and to be used. A lot of this technology is out there only because of this subcommittee.

We are trying to build the Internet, the seamless capacity to globally trade all these products. That has been our goal for those last couple of decades. But we also understand as a result of being the Telecommunications Subcommittee, the defects, the flaws that also exist and the risks that can be run by participants who aren't at the control buttons as well.

Let me just ask one final question. There is another roll call on the Floor, then I am going ask each one of you to give me a 1 minute summation of what you want us to remember as we go through the legislative process here.

What about the prospect that having to dynamically hedge your derivatives positions will have a similar impact as portfolio insurance, that is, that liquidity dries up?

Mr. VINELLA. Could you rephrase the question?

Mr. MARKEY. Could we have a similar situation with derivatives as we had with portfolio insurance, that is that liquidity does dry up and there isn't anyone on the other side of the deal and you wind up with a serious——

Mr. VINELLA. I think you saw it in the Askin Fund. That was exactly it, he had complex derivatives securities, which although they have been alluded to as being exchange tradable, they are not. Mortgage backed trade up to negotiated market. He had a position that he had to get out of, markets were going against him, and he was forced to liquidate at a very, very low price, due to liquidity.

Mr. MARKEY. You agree with that, Dr. Gomez?

Mr. GOMEZ. Yes, there is a very strong complex coupling between the underlying market and derivative market themselves. And even without going to such extreme cases, you see that every time you approach, for example, expiration dates, the market volatility on a short-term basis does noticeably increase. And one of the attributable attributes of that is the hedging process that goes on during that time.

Mr. MARKEY. Do you agree with that?

Ms. BEDER. Yes, it is a reality in all financial markets, they are linked together.

Mr. MARKEY. Well, I apologize, we only have 3 minutes left to go on the roll call, I apologize. So we won't have time for the summation statements.

But again, we are trying to deal with that linkage, with the interrelationship of all these markets, and just trying to afford to the regulators the authorities they would need in order to protect against the worst case scenarios, and trying to have more stable markets for the investment that we believe should be engaged in, including derivatives, without banning any of these products. I think, Mr. Vinella, you put the best summation on it; it is a package of cigarettes with a warning label on it.

As long as the warning label is accurate, informing those who might be at particular risk for that particular product, then anyone who wants to engage in it would still be allowed to do so.

Ms. BEDER. Could we provide summations for the record?

Mr. MARKEY. Yes, please, we would like summations for the record, it would be very helpful.

[The following comments were received from Ms. Beder:]

I disagree strongly with Mr. Vanilla's statement that CEO's of corporations and regulators do not understand derivatives. Derivatives, plus all other financial instruments and financial decisions, require appropriate knowledge and business prudence. Imagine a corporation who invests a significant portion of their capital in building a fast-food chain in Eastern Europe and what used to be Russia. Is this speculation? Surely the corporation is gambling that the political risk is manageable, that the currency risk can be controlled, that insurance will be available, and that the market will but its fast food product. Most of all, the corporation must ensure that if its analysis is wrong, there is sufficient capital to absorb losses. Derivatives are no different. The same study, evaluation, and exercise in prudence is required. The extremely low level of losses over the past 12 years of the derivatives market is a testament to how well both dealers and end-users who participate in this multi-trillion market have not only done their homework but have also benefitted.

I disagree with Mr. Gomez's recommendation that the taxpayers support creation of a benchmark model for regulators to use in the evaluation of derivatives. This would not only be expensive, but would increase rather than decrease the risks in the market place. For example, assume that Dr. Gomez's benchmark model is designed to measure interest rate risk. What if the derivatives dealer or end-user has currency risk rather than interest rate risk? In this case, Dr. Gomez's model would show no risk because it evaluates the wrong type of risk for the derivatives risk at hand. It is for this reason that dealers and end-users customize their risk measurement models to watch the risks that are particular to their application or portfolio. Introduction of a benchmark model would be set-back rather than an advance in derivatives risk management.

In summary, the losses in this market have been minuscule, and no further regulation is called for at this time. This opinion is supported by most regulators. After early warnings to dealers, regulators studied the derivatives market in great detail, produced valuable reports, and concluded that no additional regulation is called for at this time. This opinion is also supported by the financial press who first printed sensationalist stories about gambling, demons, mad scientists and fortune telling. But the financial press too, after studying the market in detail, changed its course. the most recent example is Fortune Magazine. After publishing a cover story titled "The Risk That Won't Go Away," it was followed with an article titled "Learning to Live With Derivatives." Derivatives play a vital and valuable role in the capital markets for both dealers and end-users. Thank you, Chairman Markey, for inviting me to appear today to discuss financial derivatives as part of the subcommittee's consideration of this topic.

Mr. MARKEY. I thank all of you for being present.

[Whereupon, at 12:07 p.m., the subcommittee was adjourned.]

[The following statement and attachment by Chairman Markey was submitted for the record:]

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U.S. House of Representatives
Committee on Energy and Commerce

SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE

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STATEMENT OF REPRESENTATIVE EDWARD J. MARKEY (D-MA)
INTRODUCTION OF DERIVATIVES DEALERS ACT OF 1994
JULY 13, 1994

Mr. Speaker, today I am introducing the "Derivatives Dealers Act of 1994." This legislation is aimed at providing a framework for improved supervision and regulation of previously unregulated derivatives dealers and assuring appropriate protections for their customers.

"Derivatives" are financial products whose value is dependent on -- or "derived" from -- the value of some underlying financial asset such as a stock, bond, foreign currency, commodity, or an index representing the values of such assets. Some derivatives have been around for many years, such as the exchange-traded futures and options used by investors and dealers seeking to hedge positions taken in the stock and bond markets, or to speculate on future market movements.

Within the last few years, however, such exchange-traded futures and options have been supplemented by a vast and dizzying array of over-the-counter (OTC) derivatives. These include forwards, swaps, options, swaptions, caps, floors, and collars that may be linked to the performance of the Japanese stock market, the dollar-deutschemark exchange rate, the S&P 500, or virtually any other asset. Today, the total outstanding value of the principal underlying such over-the-counter derivatives is estimated to be over $12 trillion.

The dynamic growth of the OTC derivatives market is the direct result of developments in computer and telecommunications technology and breakthroughs in modern portfolio management theory that have created a new world of cyber-finance that is reshaping U.S. and global financial markets. These new financial instruments are an important component of modern financial activity and provide useful risk management tools for corporations, financial institutions, and governments around the world seeking to respond to fluctuations in interest rates, foreign currency exchange rates, commodity prices, and movements in stock or other financial markets.

While OTC derivatives are frequently used to hedge foreign currency or interest rate risks or to lower borrowing costs, there has been a proliferation of increasingly exotic, customized financial contracts or instruments that enable dealers and end-users to make speculative synthetic side bets on global financial markets. This development has raised concerns over the potential for OTC derivatives to increase, rather than reduce risk of financial loss or contribute to a future financial panic. In addition, the concentration of market-making functions in a small number of large banks and securities firms, the close financial inter-linkages OTC derivatives have created between each of these firms, and the sheer complexity of the products being traded raise serious concerns about the potential for derivatives to contribute to serious disruptions in the fabric of our financial system.

I believe that the public interest demands that regulators have adequate tools on hand to minimize the potential for OTC derivatives to contribute to a major disruption in the financial markets, either through excessive speculation and over-leveraging, or due to inadequate internal controls and risk management on the part of major derivatives dealers or end-users. I also believe that our financial regulatory structure must assure that there are appropriate customer protections in place in the form of full disclosure, accurate financial accounting, appropriate sales practices, and restrictions against fraudulent or manipulative activity.

In light of the explosive growth of and the public policy issues raised by OTC financial derivatives, the Subcommittee on Telecommunications and Finance, which I chair, wrote to the General Accounting Office (GAO) in June 1992 to request a comprehensive study of the derivatives market. At that time, the Subcommittee noted that the trading of new and complex derivative products by financial institutions and their customers had greatly increased in recent years, creating a corresponding need to assure that knowledge of how to manage and oversee the risks associated with these products was keeping pace. The Subcommittee asked the GAO to examine the nature and extent of the use of derivative products and determine how well the dealers and end-users of these products handled the related risks. In addition, the Subcommittee asked the GAO to examine how well federal regulators protect the federal interest and to identify any regulatory inconsistencies or gaps in regulation that might result in harm to the financial system.

The GAO derivatives study submitted on May 19, 1994 response to the Subcommittee's request has identified some serious gaps in the current legal and regulatory structure relating to OTC derivatives.

First, the GAO made a series of recommendations aimed at improving federal supervision of bank dealers in OTC derivatives. These include developing consistent capital standards, requiring independent and knowledgeable audit committees, performing comprehensive annual examinations, and requiring bank dealers to provide better information on counterparty concentrations and the amount and type of their derivatives holdings. The GAO found that the bank regulators already have considerable legal authority to undertake such regulatory reforms.

Second, the GAO recommended that the SEC use its existing legislative authorities to improve disclosure and accounting treatment of derivatives. The GAO recommended that the SEC take steps to ensure that major end-users of derivatives improve their internal controls and risk management systems. The GAO also recommended that the SEC, both directly through its review of disclosure documents filed by public companies and in its capacity in overseeing accounting standards set by the Financial Accounting Standards Board (FASB), ensure that investors receive full and accurate disclosures regarding the derivatives activities of corporations, mutual funds, and other major institutional end-users of derivative financial products. The SEC has broad authority under existing law to mandate such changes.

Finally, the GAO identified serious gaps in the current legal and regulatory framework that allows derivatives dealers affiliated with securities firms or insurance companies to largely escape the type of regulations which are already in place for derivatives dealers affiliated with banks. GAO's testimony before the Subcommittee also identified potential gaps in antifraud and antimanipulation enforcement authority, and sales practice regulation. In response, the GAO recommended that this "black hole" be plugged by granting a federal regulator, such as the Securities and Exchange Commission, appropriate authority to conduct examinations and set capital standards for these currently unregulated dealers.

The Subcommittee has closely examined the derivatives markets and the findings and recommendations of the GAO study in oversight hearings held on May 10, 19, 25 and July 7th of this year. We have heard testimony from the GAO, from current and former financial regulators, from derivatives dealers and other experts. Based on the information gathered in the course of these hearings, and other inquiries undertaken by the Subcommittee, I have crafted a piece of legislation which would close the most glaring legal gap affecting the derivatives markets -- the presence of virtually unregulated OTC derivatives dealers in the market.

The "Derivatives Dealers Act of 1994" I am introducing today represents a three-tiered approach to derivatives regulation.

First, the bill would define "derivative" to include any financial contract or other instrument that derives its value from the value or performance of any security, currency exchange rate, or interest rate (or group of index thereof). It should be noted with respect to instruments based on currency exchange rates, that the definition would exclude the most common type of derivative instrument -- forward rate contracts -- but would include foreign currency swaps that have a duration greater than 270 days. Securities traded on an exchange or on the NASDAQ, futures or options on futures, and bank or savings institution deposits also would be excluded.

Second, the definition of "security" in section 3(a)(10) of the Securities Exchange Act of 1934 ("Exchange Act") would be amended to include derivatives based on the value of any security. While options on securities already are included within this definition, the amendment would bring equity swaps under the definition of "security" and subject transactions in equity swaps to regulation under the Exchange Act.

Third, persons defined as "derivatives dealers" would become subject to Securities and Exchange Commission ("Commission") regulation. Derivatives dealers that are not (1) registered broker-dealers or (2) material associated persons of registered broker-dealers that have filed notice with the Commission (see discussion below), would be required to register with the Commission and would be subject to Commission rulemaking and enforcement authority. Commission rulemaking would focus on financial responsibility and related recordkeeping and reporting requirements, as well as on the prevention of fraud. Such dealers also would be required to become members of an existing registered securities association, or any registered securities association that may be established for derivatives dealers. Rules adopted by a registered securities association would focus on the prevention of sales practice abuses and the establishment of internal controls.

Derivatives dealers that are material associated persons of registered broker-dealers would be required, as a general matter, to file a form of notice with the Commission. Alternatively, such dealers would be permitted to register, as discussed above. Dealers that file notice would be regulated indirectly through their broker-dealer affiliate. The risk assessment provisions already in place under the Exchange Act, which would be amended by this bill, would be utilized for this purpose. In addition, the broker-dealer's net capital would be based, in part, on the derivatives activities of its affiliated derivatives dealer. The designated examining authority for the broker-dealer would have rulemaking and enforcement authority with respect to the derivatives activities of both the broker-dealer and the affiliate. The Commission also would be authorized to adopt rules designed to prevent fraud.

This bill will close the regulatory black hole that has allowed derivatives dealers affiliated with securities or insurance firms to escape virtually any regulatory scrutiny. It will give the SEC the tools needed to monitor the activities of these firms, assess their impact on the financial markets, and assure appropriate protections are provided to their customers against any fraudulent or abusive activities. It is not a radical restructuring of the derivatives market; it is focused laser-like on the real gaps that exist in the current regulatory framework that need to be closed, and closed now.

In addition to this legislative reform package, the Subcommittee has been strongly urging the bank regulators and the Commission to make full use of the authorities they have under existing law to enhance their oversight over the derivatives market and to assure protections are afforded to end-users of derivatives and to their shareholders. As the GAO's report indicated, the bank regulators already have considerable authority to take action with respect to the activities of bank derivatives dealers, and I believe that the bank regulators should continue to make use of these authorities to improve their supervision of the derivatives activities of banks.

The GAO report also indicated that the SEC has considerable authority under existing law to enhance derivatives-related disclosures made by public companies, to regulate the use of derivatives by investment companies, and to assure the adequacy of the derivatives accounting standards established by the Financial Accounting Standards Board (FASB). The Subcommittee expects the Commission to follow through on the commitments made by Chairman Levitt during the Subcommittee's May 25, 1994 hearing to take a strong leadership role in assuring that significant improvements are made in each of these critical areas.

In this regard, the Subcommittee has recently contacted the SEC to requesting information regarding the Commission's ongoing activities and authorities, and to clarify the need for any additional legislative reforms. On June 15, 1994, I joined with Representative Fields to request certain information regarding the participation of mutual funds in the derivatives markets. On June 23, 1994, I joined with Representatives Synar and Wyden to request information regarding GAO's recommendations for enhancements in the role of audit committees in reviewing and approving the activities of OTC derivatives dealers and major end-users and the establishment of requirements for internal controls reporting with respect to derivatives. In addition, on May 23, 1994 Chairman Dingell sent letters to the SEC, the Treasury Department, and the Securities Industry Association requesting their comments on the findings and recommendations of the GAO report. Responses to each of these inquiries are expected to be received shortly.

Based on the nature of the information received from the Commission and other respondents in response to these and other inquiries and investigations, the Subcommittee will need to carefully consider the need for further legislative reforms to the bill I am introducing today as it moves through the legislative process. I look forward to working with my colleagues on the Subcommittee and with all other interested parties as the Subcommittee undertakes this effort to improve regulation of the markets for financial derivatives.

Again, I urge my colleagues to cosponsor and support this important legislation, and I ask that a section-by-section analysis of the bill's provisions be inserted into the Record at this point:

Section-by-Section Summary of the Derivatives Dealers Act of 1994

Introduced by Representative Edward J. Markey
July 13, 1994

Overview: The "Derivatives Dealers Act of 1994" represents a three-tiered approach to derivatives regulation.

First, the bill would define "derivative" to include any financial contract or other instrument that derives its value from the value or performance of any security, currency exchange rate, or interest rate (or group of index thereof). It should be noted with respect to instruments based on currency exchange rates, that the definition would exclude the most common type of derivative instrument -- forward rate contracts -- but would include foreign currency swaps that have a duration greater than 270 days. Securities traded on an exchange or on the NASDAQ, futures or options on futures, and bank or savings institution deposits also would be excluded.

Second, the definition of "security" in section 3(a)(10) of the Securities Exchange Act of 1934 ("Exchange Act") would be amended to include derivatives based on the value of any security. While options on securities already are included within this definition, the amendment would bring equity swaps under the definition of "security" and subject transactions in equity swaps to regulation under the Exchange Act.

Third, persons defined as "derivatives dealers" would become subject to Securities and Exchange Commission ("Commission") regulation. Derivatives dealers that are not (1) registered broker-dealers or (2) material associated persons of registered broker-dealers that have filed notice with the Commission (see discussion below), would be required to register with the Commission and would be subject to Commission rulemaking and enforcement authority. Commission rulemaking would focus on financial responsibility and related recordkeeping and reporting requirements, as well as on the prevention of fraud. Such dealers also would be required to become members of an existing registered securities association, or any registered securities association that may be established for derivatives dealers. Rules adopted by a registered securities association would focus on the prevention of sales practice abuses and the establishment of internal controls.

Derivatives dealers that are material associated persons of registered broker-dealers would be required, as a general matter, to file a form of notice with the Commission. Alternatively, such dealers would be permitted to register, as discussed above. Dealers that file notice would be regulated indirectly through their broker-dealer affiliate. The risk assessment provisions already in place under the Exchange Act, which would be amended by this bill, would be utilized for this purpose. In addition, the broker-dealer's net capital would be based, in part, on the derivatives activities of its affiliated derivatives dealer. The designated examining authority for the broker-dealer would have rulemaking and enforcement authority with respect to the derivatives activities of both the broker-dealer and the affiliate The Commission also would be authorized to adopt rules designed to prevent fraud.

Section-by-Section Summary:

Sec. 1. Short Title.

This section provides that the title of the bill is the "Derivatives Dealers Act of 1994."

Sec. 2. Definitions.

Section 2 would amend the Exchange Act by adding new sections 3(a)(53) through 3(a)(57), defining the following terms: derivative, derivatives dealer, material associated person, person associated with a derivatives dealer, and designated examining authority.

> (53) DERIVATIVE -- would be defined to mean any financial contract or other instrument that derives its value from the value or performance of any security, currency exchange rate, or interest rate (or group or index thereof). The definition would not include securities traded on an exchange or on the Nasdaq, forwards having a maturity at the time of issuance not exceeding 270 days, futures or options on futures, or bank or savings institution deposits.
>
> (54) DERIVATIVES DEALER -- would be defined to mean any person engaged in the business of buying, selling, or entering into derivatives for his own account. The definition would not include persons who trade for their own account not as part of a regular business, or financial institutions as defined in section 3(a)(46) of the Exchange Act. The definition is based on the definition of "dealer" in section 3(a)(5) of the Exchange Act.
>
> (55) MATERIAL ASSOCIATED PERSON -- would be defined to mean any associated person of a broker, dealer, government securities broker, government securities dealer, municipal securities dealer, or derivatives dealer (other than a natural person) whose business activities are reasonably likely to have a material impact on the financial or operational condition of the broker, dealer, government securities broker, government securities dealer, municipal securities dealer, or derivatives dealer, including on its net capital, liquidity, or ability to conduct or finance its operations. The definition is based on the risk assessment provisions of the Exchange Act in sections 17(h) and 15C(b)(2).
>
> (56) PERSON ASSOCIATED WITH A DERIVATIVES DEALER -- would be defined to mean any partner, officer, director, or branch manager of a derivatives dealer (or any person occupying a similar status or performing similar functions), and any other employee engaged in derivatives activities. The definition is based on the definition of "person associated with a broker or dealer" in section 3(a)(18) of the Exchange Act.

(57) DESIGNATED EXAMINING AUTHORITY -- would be defined to mean the national securities exchange or registered securities association of which a registered broker or dealer is a member, and if such broker or dealer is a member of more than one, the organization designated by the Commission as the principal examining authority for such broker or dealer.

TITLE I - DERIVATIVES DEALERS

Sec. 101. Derivatives Dealer Registration. This section of the legislation would add new section 15D to the Exchange Act, paralleling the provisions of sections 15, 15B, and 15C thereof. The section references in the following analysis of section 101 are to the provisions of the new section 15D of the Exchange Act and not to the sections of the bill.

Section 15D(a) -- Registration required.

Paragraph (1)(A) -- Registration of derivatives dealers; registration requirement. This provision would make it unlawful for any derivatives dealer (other than a registered broker or dealer, or a material associated person of a registered broker or dealer that has filed notice under subparagraph (B) of this paragraph) to make use of the mails or any means or instrumentality of interstate commerce to engage in derivatives transactions unless it registers with the Commission in accordance with paragraph (2) of this subsection.

Paragraph (1)(B) -- Material associated persons of registered brokers and dealers. This paragraph would establish a notice filing requirement for derivatives dealers that are material associated persons of registered brokers or dealers (other than a material associated person of a registered broker or dealer that is a registered broker or dealer, or a derivatives dealer registered in accordance with paragraph (2) of this subsection). Such derivatives dealers would be required to file a written notice with the Commission. Similarly, they would be required to file a written notice when they cease to act as derivatives dealers. Derivatives dealers permitted to file notice would be permitted, as an alternative, to register in accordance with paragraph (2) of this subsection.

Paragraph (2) -- Registration Procedure. This paragraph would require a person to register as a derivatives dealer by filing a registration application with the Commission containing such information and documents as the Commission may, by rule, prescribe. The Commission would be required to grant registration or institute proceedings to deny registration within 45 days after receipt of the application by the Commission or within a longer period of time to which the applicant consents. The Commission would be required, by order after a hearing, to deny registration to any derivatives dealer if it had determined that the applicant did not satisfy the requirements of section 15D, or, that if it were so registered, it would be subject to suspension or revocation of its registration under subsection (c).

Paragraph (3) -- Prohibited conduct. This paragraph is the counterpart of existing sections 15(b)(3), 15B(a)(3) and 15C(a)(3) of the Exchange Act governing brokers and dealers, municipal securities dealers, and government securities brokers and dealers. This paragraph would make unlawful any act or practice or course of business prohibited by the Exchange Act (other than section 5 or paragraph (1) of this subsection) by any derivatives dealer registered or having filed notice under paragraph (1) (and persons acting on its behalf) that would be prohibited if the mails or any means or instrumentality of interstate commerce were used in connection therewith irrespective of any use of such means.

Paragraph (4) -- Exemptions. This paragraph is the counterpart of existing sections 15(a)(2), 15B(a)(4), and 15C(a)(5). The Commission would be granted authority to exempt a derivatives dealer or a class of derivatives dealers from the provisions and rules under section 15D. An exemption would be allowed if the Commission finds it consistent with the public interest, the protection of investors, and the purposes of this title.

Section 15D(b) -- Rules. This subsection is the counterpart of existing section 15C(b) applicable to government securities brokers and dealers.

Paragraph (1) -- Authority. This paragraph would give the Commission authority to promulgate rules to regulate the activities of registered derivatives dealers as follows:

> (A) To provide safeguards with respect to the financial responsibility and related practices of registered derivatives dealers including, but not limited to, capital adequacy standards and the carrying and use of customers' deposits or credit balances;
>
> (B) To require every registered derivatives dealer to make and transmit reports to and furnish copies of records to the Commission, and to file annually or more frequently a balance sheet and income statement certified by an independent public accountant, prepared on a calendar or fiscal year basis, and such other financial statements (which shall, as the Commission specifies, be certified) and information concerning its financial condition; and
>
> (C) To prescribe records to be made and kept by registered derivatives dealers and the periods for which such records would be preserved.

Paragraph (2) -- Authority to limit disclosure of information. Under this paragraph, the Commission would not be compelled to disclose information required to be kept or reported under rules adopted under subsection (b)(1).

Paragraph (3) -- Fraudulent acts and practices. This paragraph parallels existing section 15(c)(2)(D). With respect to any derivatives dealer, this paragraph would authorize the Commission to issue rules and regulations to define, and prescribe means reasonably designed to prevent, such acts and practices as are fraudulent, deceptive, or manipulative.

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Paragraph (4) -- Compliance with rules under this section. This paragraph parallels existing section 15C(b)(7) and would make it unlawful for any derivatives dealer to effect any transaction in, or to induce or attempt to induce the purchase or sale of, any derivative in contravention of any rule adopted under section 15D.

Section 15D(c) -- Enforcement by the Commission. The provisions of this section parallel existing provisions of section 15C(c).

Paragraph (1) -- Administrative powers to impose sanctions. With respect to any derivatives dealer registered or required to register with the Commission, this paragraph would give the Commission authority to censure, limit the activities of, and suspend or revoke the registration of such derivatives dealer. The Commission also would have authority to censure, limit the activities of, suspend, or bar a person associated with a derivatives dealer. The Commission would be permitted to take these actions after an opportunity for a hearing. Pending final determination of whether the registration of any derivatives dealer should be revoked, the Commission would be permitted to suspend registration, if after an opportunity for hearing, the Commission determines that the suspension would be necessary or appropriate, in the public interest or for the protection of investors. Provisions also are included to permit voluntary withdrawal from registration.

Paragraph (2) -- Persons suspended or barred from association. This paragraph would make it unlawful for any person to whom an order entered pursuant to paragraph (1) of this subsection suspending or barring him from being associated with a derivatives dealer to become associated with a derivatives dealer without the consent of the Commission. It also would be unlawful for a derivatives dealer to allow such a person to become associated with it if the derivatives dealer knew or, in the exercise of reasonable care, should have known of the suspension or bar.

Section 15D(d) -- Examination of Records. This section parallels existing section 15C(d)(1). The records of any derivatives dealer registered or required to register, or that has filed notice or is required to file notice, would be subject to reasonable periodic, special, or other examinations by the Commission.

Section 15D(e) -- Securities association membership. This section is similar to existing section 15C(e). Paragraph (1) of this subsection would require any derivatives dealer subject to registration under section 15D(a)(1)(A) to become a member of a registered securities association.

Paragraph (2) would permit the Commission to exempt any derivatives dealer subject to registration under section 15D(a)(1)(A) from the requirements of section 15D(e)(1).

TITLE II - BROKER-DEALER OVERSIGHT REFORMS

Sec. 201. Derivatives on Securities. The definition of "security" contained in section 3(a)(10) of the Exchange Act would be amended to include derivatives based on the value of any security.

Sec. 202. National Securities Exchanges. Section 6 of the Exchange Act would be amended by adding new subsection (g) to confirm the authority of national securities exchanges to make rules applicable to their members, and material associated persons of such members who have filed notice and that are associated with members for which the exchange is the designated examining authority, who engage in derivatives transactions. Such rulemaking authority would be focused on enforcing compliance with applicable provisions of the Exchange Act, providing for appropriate discipline, providing for reasonable inspection and examination of books and records, preventing fraudulent and manipulative acts and practices, promoting just and equitable principles of trade, and requiring internal controls.

Sec. 203. Financial Responsibility. Under the bill, separate capital requirements would not be imposed on derivatives dealers that are material associated persons of registered brokers or dealers and that file notice under section 15D. Exchange Act section 15(c)(3), however, would be amended to clarify the Commission's authority to consider in determining the capital requirements of registered brokers and dealers the financial activities conducted by, the customary sources of capital and funding of, and credit risk and aggregate leverage of, any of their material associated persons that have filed notice or are required to file notice under section 15D.

Sec. 204. Registered Securities Association. Section 15A of the Exchange Act would be amended by adding new subsection (j) to confirm the authority of registered securities associations to make rules applicable to their members, and material associated persons who have filed notice and that are associated with members for which the association is the designated examining authority, who engage in derivatives transactions. Such rulemaking authority would be focused on enforcing compliance with applicable provisions of the Exchange Act, providing for appropriate discipline, providing for reasonable inspection and examination of books and records, promoting just and equitable principles of trade, and requiring internal controls.

Sec. 205. Risk Assessment for Government Securities Brokers and Dealers. Section 15C(b)(2)(A) would be amended to authorize the Secretary to require that information be furnished regarding the financial activities of the material associated persons of registered government securities brokers and dealers, including information regarding trading activity in any financial, securities, or derivatives market. This information should permit the appropriate regulatory agencies to evaluate any effect the activities of the material associated person may have on any financial, securities, or derivatives market, or any participant in such market. The Secretary also would not be limited to requiring reports of such information no more frequently than quarterly.

Section 15C(b)(2)(B) would be amended to authorize the appropriate regulatory agencies to obtain reports from registered government securities brokers and dealers regarding the financial, securities, and derivatives activities of their material associated persons in response to concerns regarding the financial or operational condition of any registered government securities broker or dealer or concerns regarding the stability or integrity of any securities or derivatives market.

Sec. 206. Risk Assessment for Brokers and Dealers. Section 17(h)(1) would be amended to authorize the Commission to obtain information regarding the financial activities of the material associated persons of registered brokers and dealers, including information regarding trading activity in any financial, securities, or derivatives market. This information should permit the Commission to evaluate any effect the activities of the material associated person may have on any financial, securities, or derivatives market, or any participant in such market. The Commission also would not be limited to requiring reports of such information no more frequently than quarterly.

Section 17(h)(2) would be amended to authorize the Commission to obtain reports from registered brokers and dealers regarding the financial, securities, and derivatives activities of their material associated persons in response to concerns regarding the financial or operational condition of any registered broker or dealer or concerns regarding the stability or integrity of any securities or derivatives market.

Sec. 207. Rules, Regulations, and Orders; Annual Reports. Section 23(a)(1) would be amended to authorize the Commission to classify derivatives for rulemaking purposes.

Sec. 208. Conforming Amendments. Section 3(a)(48) -- Registered broker or dealer. Under the bill, registered derivatives dealers would be required to be members of a registered securities association. Accordingly, this definition would provide that derivatives dealers required to register under section 15D would be deemed to be registered brokers or dealers for purposes of those provisions of the Exchange Act relating to membership in registered securities associations.

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